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# Thinking Style Differences of Female College and University Presidents: A National Study

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# THINKING STYLE DIFFERENCES OF FEMALE COLLEGE AND UNIVERSITY PRESIDENTS: A NATIONAL STUDY

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## ABSTRACT

### Thinking Style Differences of Female College and University Presidents: A National Study

The purpose of this study was to identify thinking style preferences of female college and university presidents and determine if differences in thinking style exist with regard to the independent variables of Carnegie classification, institutional control, highest academic degree earned, academic background/specialty, age, and total years of presidential experience.

The Inquiry Mode Questionnaire (InQ) and a demographic data form were distributed to all 595 female presidents with institutions classified as Associate's or higher by the Carnegie system. Responses were received from 369 (62.02%), with 328 (55.13%) utilized for data analysis.

Descriptive statistics, MANOVA and ANOVA tests were used to address the seven primary queries, with significance noted at $p<.05$. All but one primary null hypothesis was rejected using MANOVA tests. There is difference between thinking style and every independent variable with the exception of highest academic degree earned. Each null hypothesis was then applied to the five individual InQ thinking styles. ANOVA testing allowed for 20 of 30 subsequent null hypotheses to be rejected.

A thinking style profile of female college and university presidents was developed. The Idealist and Analyst thinking styles were more preferred than the other thinking styles, with more than 75% of participants scoring highest in one of these two areas. There was a neutral preference for the Pragmatist, Realist, and Synthesist styles, with Synthesist being the least preferred style.

Eleven conclusions could be established from this study, pertaining to female college and university presidents. These include (a) they are Idealist or Analyst thinkers, (b) differences between leadership style and thinking style, (c) differences between thinking style and Carnegie classification, (d) differences between thinking style and institutional control, (e) a predominant disciplinary specialty in Education, (f) differences between occupational choice and thinking style, (g) an aging workforce, (h) probability to be selected as president in their early fifties, (i) they have 9 years of experience as president, (j) there is customary expectation of a doctoral degree, and (k) Contingency Leadership Theory, in connection with and general Thinking Style Theory served as an appropriate theoretical framework.

## DEDICATION

This dissertation is dedicated to all those who have the desire, the courage, and the determination to rise above hardships, tackle challenges, conquer fears, and shatter stereotypes. May we all define our existence on our own terms, and may we do so with an unbridled spirit.

I also dedicate this work to the memory of my father, Bernie Martin (1932 – 1986). Our time together was too brief, and I was forced to encounter one of the stark realities of life at a very young age. Dad - I mourn the fact that I didn't have you in my life long enough to really have gotten to know you. I cherish what few thoughts of you are burned into memory. I hope that you would be proud of me. Until we meet again…

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Although I'm a skeptical spirit, and often question the powers that be, I am thankful for God's presence throughout this, and all journeys in my life.

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# THINKING STYLE DIFFERENCES OF FEMALE COLLEGE AND UNIVERSITY PRESIDENTS: A NATIONAL STUDY

## CHAPTER I

## INTRODUCTION, OVERVIEW, PROBLEM STATEMENT

Throughout the years, a significant disparity has existed between the number of male college presidents and the number of female college presidents (Brown, 2000; DiGeorgio-Lutz, 2002; Wise, 2003). A 2002 report from the American Council on Education (ACE) reported that the number of females holding the office of president has markedly increased, however. ACE affirmed that females accounted for 9.5% of all college and university presidencies in 1986, 19.3% in 1998, and 21.1% in 2001.

Despite the evidenced steady increases in the number of female college and university presidents, researchers have continued to focus their attention on the characteristics and experiences of the predominantly male population that holds these chief academic positions (Borlandoe, 2005; Gregory, 2003; Guill, 1991). According to Brown (2000) and Wise (2003) more research is needed that centers on female college and university presidents. The availability of such information can provide insight into individual characteristics, career preparation, professional development activities and support systems of female presidents (Borlandoe, 2005; Brown, 2000). Expanding the research conducted with female college and university presidents can also help to recognize patterns in their

stylistic characteristics and can assist in developing a greater understanding of variables that may contribute to the selection of females as college and university presidents (Brown, 2000).

Demographic and stylistic aspects pertaining to college and university presidents have been investigated and have resulted in significant findings, with many sex-based differences noted. Variation between the sexes has been evidenced in personal attributes and behaviors associated with leadership (Jablonski, 1992; Miller, 1987; Wheeler, 1998), communication (Miller, 1987), and management styles (Guill, 1991; Miller, 1987).

Leadership, communication, and management approaches of female college and university presidents have been important areas for investigation during the past two decades (Brown, 2000; DeFrank-Cole, 2003; Gregory, 2003; Guill, 1991; Jablonski, 1992; Miller, 1987; Lockard, 2000). Research has depicted variations in these noted styles, in relation to certain demographic variables. Miller (1987) found that female college and university presidents' leadership, communication, and management styles differed, depending on the Carnegie classification of the institutions in which they were employed. Guill (1991) found that differences existed in management style, based on the number of years of presidential experience. Lockard (2000) supported Guill's findings and discovered that variations in leadership had a relationship to the number of years of experience.

The possibility exists that a greater understanding of thinking styles, and an exploration of thinking styles of female college and university presidents, may

offer a rationale for explaining such evidenced variations in these other stylistic components (Borlandoe, 2005). Research has indicated that such evidenced thinking style differences are a significant element associated with leadership, communication, and management approaches (Borlandoe, 2005; Harrison & Bramson, 1984; Sternberg, 1997; Yarbrough, 1995).

Thinking is defined in the intransitive sense as a process "to exercise the powers of judgment, conception, or inference" (Miriam Webster, 2006). An individual's thinking style can be defined as "how you gather and process information, how you use that information to make and act on decisions, even what kind of information you gravitate towards" (InQ Educational Materials, 2003, p. 1). According to the InQ, your thinking style "influences your every action" and is the "basic mental model that you use to explain the world, yourself, and others" (p. 1).

Thinking styles arise from a combination of one's personal preferences, as well as conditioned responses developed through early life experiences. Accordingly, each person favors a certain style of thinking or a distinct combination of thinking styles (Bruner, Goodnow, & Austin, 1962). Individual thinking style greatly affects how we analyze, associate with others, approach situations, organize, communicate, solve problems, lead, and manage (Harrison & Bramson, 1977, 1984).

Harrison and Bramson (1977) developed the Inquiry Mode Questionnaire (InQ) in order to address thinking style preferences of individuals within a variety of educational, occupational, and social settings. This research study involved the

exploration of thinking style preferences of female college and university presidents, as identified through use of the InQ. The InQ serves to assess the manner in which individuals approach problems, collect and evaluate data pertinent to the problem, organize the data in order to address the problem, and then reach conclusions (Bruvold, Parlette, Bramson, & Bramson, 1983). The fundamental premise of the InQ is that individuals approach problems in different ways and that these individual distinctions are not based on personality style, but rather, are distinct styles of thinking.

The InQ identifies and measures five thinking styles: Analyst, Idealist, Pragmatist, Realist, and Synthesist. The Analyst style is characterized by an emphasis on formal logic and analysis, in addition to emphasizing theory as the basis for decisions. The Idealist thinking style is illustrated by people who tend to view situations holistically, with a heavy focus on the process rather than on the facts involved. The Pragmatist style of thinking is distinguished by an individual's emphasis on effectiveness, and in moving toward results that bring resolution to problems of immediate concern. The Realist style is exemplified by persons who place emphasis on facts and data that can be identified directly, and on solutions that are practical and effective. Finally, the Synthesist thinking style is typified by incorporating opposing viewpoints in finding solutions to problems, and in focusing on abstract data that are deemed pertinent to the situation at hand (Bruvold, et al., 1983).

As discussed above, these thinking styles all have very specific characteristics. These styles indicate a range of modes through which individuals

communicate, work with groups, focus, and lead. Individuals approach situations from their predominant thinking style, and the predominant style also influences what processes the individual incorporates in order to adapt to various environments or situations (Harrison & Branson, 1984; Sternberg, 1997).

It was the limitations of the knowledge base of such personal qualities of female college and university presidents that was the basis for this study. Because of these current limitations, we have yet to ascertain the manner in which these women think, and how their individual modes of thinking may affect their communication and administrative actions within the colleges and universities they serve.

The insufficiency of the research conducted on thinking styles justifies that a chasm in the literature exists regarding thinking styles of female college and university presidents. By identifying the preferred thinking styles of current female college and university presidents at selected institutions within the United States, it was anticipated that this void in the research would be resolved. This research allowed for the development of multiple thinking style profiles of female college and university presidents. The importance of acquiring such information was noted by Borlandoe (2005), who stated that "understanding more about the relationship among thinking styles may give aspiring women a better perspective on how to achieve a…college presidency and how to be an effective president once hired" (p. 3).

Borlandoe (2005) expanded on justification for conducting this type of study by stating that "We do not know enough about the thinking styles of women

in leadership roles" (p. 5). She continued by suggesting that a greater awareness of thinking styles of female college presidents would contribute to the knowledge base of a rather new sphere of thinking style theory and would aid in developing a greater understanding of women in particular who hold these chief executive positions. This current study could contribute to what is known about higher education leadership and management behaviors, because these behaviors are an outgrowth of how an individual thinks and operates.

Applying thinking style research in a comprehensive manner within the scope of higher education administration is a concept that is both contemporary and innovative. When considering the importance of leadership, communication, and management in such context, it is vital that we focus research toward the area of thinking styles and its relationship to each of these areas.

This chapter provides a description of the research problem, followed by a statement of purpose. Next, introduction of the theoretical foundations of the study is offered, followed by discussion of the importance of conducting such research. Research questions and definitions of significant terms associated with this study are then provided. Finally, limitations, delimitations, and assumptions are noted. This chapter ends with information pertaining to the organization and presentation of the remaining material associated with this study.

## Statement of the Problem

The college and university presidency is a complex profession, comprised of individuals with various personal and professional objectives who are also working toward the successful attainment of institutional objectives. These

presidents come from varied educational, managerial and social backgrounds and have different personal values and philosophical beliefs (Borlandoe, 2005; Lockard, 2000; Scott, 1989).

While still dominated by males, women are making strides as evidenced by the increased numbers of college and university presidencies they hold. In spite of the increases in numbers, there remain voids in the research literature concerning various personal stylistic aspects and characteristics of female college and university presidents (Borlandoe, 2005; DiGeorgio-Lutz, 2002).

Research on female college and university presidents has focused on aspects such as thinking styles of community college women administrators in select states (Borlandoe, 2005), career paths, profiles and experiences of female presidents of independent colleges (Brown, 2000), and leadership styles of women college presidents (DeFrank-Cole, 2003; Jablonski, 1992; Lockard, 2000; Miller, 1987; Velivis, 1990). As discussed above, previous research conducted with male and female college and university presidents has documented leadership, communication, and management styles. Limited research has been conducted with regard to thinking styles.

Other than the Borlandoe (2005) study on thinking styles of select community college women administrators, there have been no scientific studies implemented on a national scale within the United States to affirm the thinking style preference of female college presidents. Conducting such a study on a national level is an innovative concept, but is one that is strongly supported via previous literature. In generalizing the justification for this study, it is notable to

reference Borlandoe's recommendations for additional research, as she stated a need for additional thinking style research on female college administrators, in order to provide "significant information to the body of thinking style literature for groups" (p. 92). It was also suggested by Borlandoe (2005) that future thinking style studies consider the connection to leadership in order to build the body of knowledge regarding leadership as it relates to women.

Thinking style research has indicated that cognitive preferences exert a substantial influence on how individuals relate and communicate with one another (Parlette & Ray, 1993; Svendsen & Svendsen, 1995; Tucker, 1999). Based on the body of thinking style research that exists, there is indication that differences in thinking styles may contribute to the demonstrated variations in leadership, communication, and management styles of female college and university presidents. A need existed to investigate whether variations in thinking style preference actually do exist between female college and university presidents and in what contexts these differences, if any, are evident.

## Purpose of the Study

The purpose of this study was two-fold: to identify the thinking style preferences of female college and university presidents at select private and public institutions, and to determine if differences in thinking style exist with regards to various institutional and personal demographic factors. This study was designed to examine whether differences in thinking style preference exist with regard to Carnegie classification grouping (Associate, Baccalaureate, Master's, Doctoral), and institutional control (federal, independent non-profit, independent-

religious, local, private, proprietary, state, state and local, state-related). Additionally, personal demographic information of the female presidents was evaluated to determine whether certain characteristics indicated a statistically significant difference to the president's preferred thinking style. Demographic characteristics considered included the highest academic degree earned, primary area of academic background/specialty, age, and total years employed as president. This study served to expand the knowledge base regarding the stylistic variables that characterize female college and university presidents. This study focused on the connection between thinking style and leadership, as they relate to female college and university presidents. This area of study was suggested as an area of need in a similar study conducted by Borlandoe in 2005.

## Theoretical Foundation of the Study

The research foundation of this study was a combination of two theoretical concepts. The first model, Contingency Leadership Theory, with emphasis on the theory proposed by Fiedler, emphasizes personality and situation. The second construct, Thinking Style Theory, as first proposed by Allport in 1937, was the chief theoretical focus of this study. Each model is overviewed in this section, and then discussed in detail within the literature review presented in Chapter II.

### *Contingency Leadership Theory*

Theorists believe that there is no single best way to categorize and classify organizational structure (Borgatti, 1996; Colky, Colky & Young, 2002; Gayle, Tewarie, & White, 2003; Handy, 1993). Important to consider are the organization's structure, size, technology, and the requirements of the

environment. Institutions of higher education vary in regard to each of these aspects, and it is ultimately the institution's distinct goals and mission, as well as the individual leadership style of the institution's president, that give definition to the specific college or university's organizational structure (Gayle, et al., 2003).

Currently, there are four contingency models, each of which are addressed in depth within the literature review presented in Chapter II. The four models are: (1) Fiedler's Contingency Theory, (2) Situational Leadership Theory, (3) Vroom-Yetton Expectancy Model, and (4) House-Mitchell Path-Goal Theory. This study will focus on Contingency Theory proposed by Fred Fiedler (1967), which emphasizes the leader's personality and the situations in which the leader operates. Fiedler's model predicts that the effectiveness of the leader depends upon both the characteristics of the leader and the favorableness of the situation. Fiedler (1967) suggests in the model that the manner in which an individual functions within a particular environment is highly dependent upon his or her thinking style. Therefore, the effectiveness of a female college or university president within their specific institution may depend, in part, upon her specific thinking style preference.

### *Thinking Style Theory*

The second and most focused-upon theoretical construct of this study was that of thinking style. Allport (1937) was the first to introduce the concept of thinking styles within the research literature. The term "thinking style" was used to describe patterns of behavior or methods of accomplishing tasks that were consistent. Witkin (1962), who was another of the earlier thinking style theorists,

focused his work on how individuals process information. Later, Myers and Myers (1980) developed a theory of thinking style that was primarily based on Jung's personality theory. Additionally, Myers and Myers (1980) added a dimension that dealt with how individuals interact with their world through judgment and perception. Although each of these concepts holds certain individual characteristics, each is grounded in the idea that thinking style affects how we analyze, associate with others, approach situations, communicate, solve problems, and operate on a daily basis.

Mayer (1983) noted that thinking style and the process of thinking have been researched within several contexts. Some of these perspectives included social psychology research on attitude formation and change, developmental psychology research on cognitive development, as well as the concepts of personality and cognitive style, and that of intelligence testing. Mayer (1983) concluded that such varying contexts lead to definitional problems. Because some theorists defined thinking as an internal process, and others as an external process, Mayer suggested a definition that integrated each. Mayer (1990) later went on to define thinking as an internal cognitive process that can sometimes be viewed as an external behavior. Additional information regarding the definitional dilemma associated with thinking style, along with other terms, is presented within the like-named section in Chapter II.

Further, the literature review of Chapter II also examines the psychological aspects of thinking, with detailed focus upon the development of thinking style theories by Justus Buchler and C. W. Churchman. It was their

research, along with the personality research of Jung (1971), which formed the basis for the initial development of the *Inquiry Mode Questionnaire* (InQ) by Robert Bramson and Allen Harrison in 1977. Research concerning experiential learning by Kolb (1984) later prompted modifications to the InQ in order to develop an instrument that was more valid and reliable for determining thinking style and subsequent characteristic profiles.

## Significance of the Study

This study is modeled, in part, from the dissertation research study conducted by Janice Borlandoe (2005). It is feasible that the findings from this study could be used as a paradigm towards offering a greater understanding of thinking styles. This enhanced understanding could contribute to more effective leadership, communication, and management within colleges and universities.

This study provides the first known national research on thinking styles of female college and university presidents. The numbers of female college and university presidents are increasing, yet these women remain a minority within academia. As more women do progress through the administrative ranks of colleges and universities and attain chief administrative positions, it is important to understand and learn more about the role played by individual thinking style preference and the contexts in which differences in thinking style are evidenced.

The primary significance of this study was to strengthen and expand the existing body of knowledge concerning thinking styles of female college and university presidents. Also of significance was the fact that the use of the InQ instrument for research in higher education settings has been sparse. This study

adds extensive information to the research paradigm of the InQ, and may serve to provide information for other researchers, who may then utilize this valid and reliable thinking style assessment instrument in greater quantities of research studies. This study provides valuable information to the research base of higher education, as well as areas concerning leadership studies, psychology, and sociology and will serve to expand the foundation of information for which to base additional research.

Through this research, ancillary discussion is presented that may assist in demonstrating a link between thinking style and chosen occupational field. As well, this study imparted data detailing possible trends in the selection of college and university presidents with regards to specific thinking style preferences.

Findings from this study could be used as a primary means for offering a more in-depth understanding of thinking styles and the imperative role they may play within the organizational culture of higher education institutions. When considered from the discussed theoretical bases, females who have chosen career paths leading to college and university presidencies could incorporate an increased understanding of thinking style differences that may contribute to more effective leadership, communication, and management potential in the upper administrative ranks of colleges and universities. This descriptive analysis of the preferred thinking styles of female college and university presidents may promote an awareness of thinking styles and may offer a basis for examining one's own behaviors as related to thinking styles, leadership, communication, and management. Finally, suggested areas for future research regarding thinking

styles and higher education are explored, allowing for the formulation of a significant body of potential research.

## Research Questions

This section of Chapter I details the research questions associated with the study. It was the focus of this study to seek answers to seven primary queries associated with the thinking styles of female college and university presidents:

1. What is the predominant thinking style preference(s) of female presidents at colleges and universities located within the United States?
2. Do differences in thinking style preference of female college and university presidents exist with regard to institutional Carnegie classification?
3. Do differences in thinking style preference of female college and university presidents exist with regard to institutional control?
4. Do differences in thinking style preference of female college and university presidents exist with regard to highest academic degree earned?
5. Do differences in thinking style preference of female college and university presidents exist with regard to primary area of academic background/specialty?
6. Do differences in thinking style preference of female college and university presidents exist with regard to age?
7. Do differences in thinking style preference of female college and university presidents exist with regard to total years of college or university presidential experience?

## Definition of Terms

The following terms have particular significance to this study and should be understood with the accompanying definitions:

*Age:* The chronological length of time that the female president has lived, expressed in years, as of the last anniversary of the day of birth.

*Area of academic specialty/background:* The president's primary area of academic specialty, as expressed by the president. Areas include Arts, Business, Education, Health Sciences, Humanities, Law, Library Science, Mathematics and Physical Sciences, Natural/Biological Sciences, Social Sciences, Theology.

*Carnegie classification:* A higher education academic classification system developed in 1971 under the leadership of Clark Kerr by the Carnegie Commission on Higher Education. The classification groups institutions into categories on the basis of level of degree offering and institutional mission, and is designed to support research in higher education by identifying categories of colleges and universities that would be consistent with respect to both function of the institution and characteristics of students and faculty.

- *Doctoral/Research Universities - Extensive:* These institutions typically offer a wide variety of baccalaureate programs, and are committed to graduate education through the doctorate. During the period studied by Carnegie, the institution awarded 50 or more doctoral degrees per year across at least 15 disciplines (Carnegie Foundation, 2005).

- *Doctoral/Research Universities - Intensive:* These institutions generally offer a wide range of baccalaureate programs, and are dedicated to graduate education through the doctorate. During the period studied by the Carnegie Foundation, the institution awarded at least ten doctoral degrees per year across three or more disciplines, or at least 20 doctoral degrees each year overall (Carnegie Foundation, 2005).
- *Master's Colleges and Universities I:* These institutions offer a wide range of baccalaureate programs and are committed to graduate education through the master's degree. They award 40 or more master's degrees per year across three or more disciplines (Carnegie Foundation, 2005).
- *Master's Colleges and Universities II:* These institutions offer a wide range of baccalaureate programs, and are committed through graduate education through the master's degree. They award 20 or more master's degrees per year (Carnegie Foundation, 2005).
- *Baccalaureate Colleges – Liberal Arts:* These institutions are primarily undergraduate colleges with primary emphasis on baccalaureate programs. They award at least 50% of their baccalaureate degrees in liberal arts fields (Carnegie Foundation, 2005).
- *Baccalaureate Colleges – General:* These institutions are primarily undergraduate colleges with major emphasis on baccalaureate programs. They award less than 50% of their baccalaureate degrees in liberal arts fields (Carnegie Foundation, 2005).

- *Baccalaureate/Associate's Colleges:* These institutions are undergraduate colleges where the preponderance of conferrals is below the baccalaureate level, such as associate's degrees or certificates. Bachelor's degrees, however, account for at least 10% of undergraduate awards (Carnegie Foundation, 2005).
- *Associate's Colleges:* These institutions include community, technical, and junior colleges. They primarily offer associate's degree and certificate programs, with bachelor's degrees representing less than 10% of all undergraduate awards (Carnegie Foundation, 2005).

*Note:* For the purposes of this study, Carnegie classifications are combined into four major groupings: Associate, Baccalaureate (including Baccalaureate/Associate's, Baccalaureate-General, Baccalaureate-Liberal Arts), Master's (including Master's I and Master's II), and Doctoral (including Doctoral-Extensive and Doctoral-Intensive). References made hereafter to Carnegie classification(s) refer to these groupings.

*Combination thinker:* Sometimes referred to as a two-way thinker, a person with an inclination towards using two or more of the five thinking styles of the InQ with equal effectiveness (Svendsen & Svendsen, 1995).

*Flat thinker:* A person with a preference towards using all five of the InQ thinking styles with equal effectiveness (Svendsen & Svendsen, 1995). An individual who shows no distinct preference for any particular thinking style is also considered to be a flat thinker. The InQ denotes a flat thinker

as one with no single highest score at or above 60 points for any of the five noted thinking styles.

*Inquiry mode:* The technical name for the five styles of thinking: Analyst, Idealist, Pragmatist, Realist, and Synthesist (Harrison & Bramson, 1984). For purposes of this study, the inquiry modes will be referred to as thinking styles.

*Inquiry Mode Questionnaire (InQ):* A forced-choice, self-reporting research instrument used to assess an individual's preference for thinking strategies used in relation to problem solving and management. The instrument, originally designed by Harrison and Bramson, was first published in 1977.

*Institutional control:* The ultimate governing body of a college or university. For purposes of this study, the following institutional control classifications will be used: federal, independent non-profit, independent-religious, local, private, proprietary, state, state and local, and state-related.

- *Federal control:* A public institution that receives the great majority of operating funds from the federal government and is controlled by the federal government.
- *Independent non-profit control:* A private institution that receives all or most of the necessary operating funds from independent sources and is controlled by independent sources.
- *Independent-religious control:* A private, religious-affiliated institution that receives operating funds from a specific religious affiliation and is controlled by the respective religious entity.

- *Local control:* A public institution that receives all or most of the necessary operating funds from local sources and is controlled by the local area.
- *Private control:* An institution that receive all or most of the necessary operating funds from unspecified private sources and is controlled by private individuals or entities.
- *Proprietary control:* An institution that is privately owned and managed and run as a profit-making organization.
- *State control:* A public institution that receives all or most of the necessary operating funds from the respective state government and is controlled by the state.
- *State and local control:* A public institution that receives basically equivalent operating funds from both local sources and the respective state government and is controlled by both state and local governments.
- *State-related control:* A public institution that receives some state funding but is under independent control rather than being under the control of the state.

*President:* The chief executive officer of a college or university. In most instances, these officers hold title of "President," but others are referred to as "Chancellor," or "Chief Executive Officer." In this study, the term *President* will be used to refer to the individual who holds this executive office.

*Thinking:* A cognitive process involving the manipulation of information and experiences that are perceived, learned, remembered, and encoded.

*Thinking style:* The favored method(s) individuals use to manipulate and process fixed information so that they can act, reason, make decisions, communicate, deduce, inquire, or create new knowledge (Mayer, 1983). It is a consistent preference for approaching, solving, and resolving situations (Harrison & Bramson, 1984).

Five InQ thinking styles are researched in this study and are described as follows:

- *Analyst thinking style:* This style is characterized by people who see the world in terms of structure, organization, and prediction. The style is exemplified by a belief of one best way for accomplishing any task. This style is prescriptive and method-oriented.
- *Idealist thinking style:* A thinking style distinguished by those who experience reality as the whole into which new data are incorporated, based on perceived parallels to things they already know. Individuals who express this thinking style are typically assimilative, receptive, and need-oriented.
- *Pragmatist thinking style:* A thinking style exemplified by people who perceive the world as unpredictable and who offer an ever-changing approach to problem solving. These individuals tend to be adaptive, incremental, and results-oriented.
- *Realist thinking style:* A thinking style distinguished by inductiveness. The mental modes of Realist thinkers are derived primarily from

observations and their own experiences. These people tend to be pragmatic and task-oriented.

- *Synthesist thinking style:* This style is characterized by a focus on ideas, and in finding connections among things that others may see as having little or no relationship. Individuals who express this thinking style are typically challenging, speculative, integrative, and process-oriented.

*Years of employment of president:* The cumulative number of school years, including the present year, that the woman has been the president at any college or university.

## Limitations of the Study

The following were the limitations for this study:

1. Self-reporting questionnaires can be limited by participants' responses and can be subject to contamination (Johnson & Christensen, 2004). Johnson and Christensen also made the statement: "Others may not have the insight into their own behavior or thinking to answer a question in a way that will accurately communicate information about them. These limitations of self-report inventories always have to be considered when using them to collect information" (p. 149).
2. A non-experimental research study does not permit for random assignment to groups or for manipulation of independent variables (Johnson & Christensen, 2004).

3. Factors uncontrollable by the researcher, such as the president's schedule, willingness to participate, and interest in the research may have interfered with participation, resulting in a smaller response rate.
4. Although the InQ instrument has been used in previous studies, and reliability and validity of the instrument have been established, the researcher could not ensure that the structure of the questionnaire or items contained within were wholly understood by all participants.
5. The use of self-reporting instruments does not allow for verification of stated responses.
6. Definitions of terms and interpretations of information made by the researcher may not have been shared by participants.
7. The views/perceptions reported by the respondents were necessarily subjective.
8. Categories or questions within the survey instrument may not have adequately depicted the participants' individual situation(s).

## Delimitations of the Study

The sample for this study was inclusive of the entire population of female college and university presidents in the United States whose institutions are classified as Associate's or higher, as affirmed by the Carnegie classification system. The results of this study may not be generalizable to female college and university presidents whose institutions are classified as Specialized, Other, or Tribal by the Carnegie classification system. The decision to exclude Specialized, Other, and Tribal institutions was based primarily on the consideration that these

institutions may be so specialized in their mission or program offerings, that any stylistic characteristic of the female presidents may not have been generalizable to the typical college and university female president population.

Although there have been no national research studies conducted with regard to thinking style preferences of male college and university presidents, the decision was made to focus this study exclusively on female college and university presidents. This choice was made, in part, on the researcher's personal interest in women in higher education, certain provisions established by organizations through which the researcher applied for research assistance, and in consideration of a desire to increase the research base on female college and university presidents due to the growing number of such female leaders. Another factor taken into consideration was that a large base of research already exists on various stylistic aspects of male college and university presidents.

## Assumptions of the Study

This section of Chapter 1 considered the assumptions of the study. The following were the specific assumptions of this study, presented to decrease threats to the validity of the research:

1. The individuals completing the InQ survey instrument and demographic data form were the female college and university presidents to whom the survey packets were addressed.
2. The individuals completing the survey materials were proficient in the English language.

3. Voluntary agreement to complete the survey materials allowed for accurate reporting of the data.
4. The InQ survey instrument is both valid and reliable for the population used in this study.

## Organization of the Study

The information contained within Chapter I establishes the basis for understanding the significance of the information to be presented in Chapter II through Chapter V. Chapter I provided a synopsis and introduction for the study. The purpose and significance of the research study on thinking style preferences of female college and university presidents was provided. Theoretical bases and justification for the study were presented, with the seven primary research questions. The relevant distinct terminologies of the study were then defined and clarified. The research study delimitations, limitations, and assumptions were expressed, and the chapter then concluded with a depiction of the organization of future chapters.

Chapter II presents a comprehensive review of the research and literature associated with this study. This information includes a discussion of the definitional dilemma of several related, yet often confused, terms essential to this study. The background and progression of the two primary theoretical underpinnings of the study will be discussed extensively. Next, a broad review of research on thinking styles, both inside and outside of education, is presented. The chapter concludes with an analysis of studies that have used the InQ survey instrument.

Chapter III readdresses the research questions, examines the research design, population, instrumentation, data collection procedures, data analysis procedures, and time schedule. The population of the study was current female college and university presidents at institutions located within the United States that are classified as Associate's or higher. Information on this population was derived by cross-examination of recent listings of higher education institution demographic data, obtained from the 2004 Peterson's Directory of College & University Administrators, and the 2005 Higher Education Directory. The testing instrument was the InQ survey that was administered together with an additional demographic self-report form used to obtain supplemental information desired for research analysis.

Chapter IV presents information on research participation, demographic characteristics of participants, dependent variable findings regarding the first research question, as well as the findings of the data analysis of all null hypotheses for research questions two through seven. Conclusions and implications from the findings are then presented in Chapter V, along with suggestions for possible practical application of concepts related to thinking style and recommendations for future research. Finally, various appendices are included to provide supporting documentation. Included within the appendices is a list of institutions with female presidents that served as the population for this study. Also included is a replica of the InQ survey instrument, copy of the demographic data form, survey participation request letter, consent form, IRB application form, and thank-you letter.

# CHAPTER II

## REVIEW OF THE LITERATURE

This chapter provides an overview of salient theories and constructs that form the conceptual framework for this study. In addition, this chapter provides an exhaustive review of pertinent research concerning thinking style and female presidential leadership. The chapter will commence with an epigrammatic discussion of the inclusion criteria that was incorporated in order to select appropriate research for review. The literature review then begins with a discourse of the definitional dilemma to four similar terms, essential to understanding the theoretical foundations of this study. The terms *cognitive style, learning style, personality style* and *thinking style*, are explored and defined as related to this study.

Next, presentation of the two theoretical concepts that form the framework for this study is made. This section provides research-based information on theories of *contingency* and *thinking style.* The concept of Thinking Style Theory is highlighted in particular, as it was a culmination of certain thinking style theories that formed the basis for the development of the Inquiry Mode Questionnaire. Thinking styles as defined by the InQ are then emphasized. Data is then presented detailing the distribution of InQ thinking styles within the United States.

Subsequently, a detailed review of previous relevant research will ensue. This section summarizes dissertations and other research studies related to thinking styles, and isolates into a separate section thinking style research that has been conducted using the InQ survey instrument. The final section of the research analysis reviews research that has been conducted with female college and university presidents that focused on leadership, communication, management styles, and/or general profiles

## Inclusion Criteria

Literature on previous research was included in this review if it met one or more criteria: (a) The research entailed inquiry into dimensions of thinking style; (b) The research incorporated the use of the Inquiry Mode Questionnaire (InQ) for measuring the level of thinking style preference; (c) The research entailed inquiry into leadership, communication, or management techniques utilized by female college and university presidents; or (d) The research entailed description of demographic characteristics of female college and university presidents, including such aspects as age, years of employment as president, and/or area of academic specialty/background.

## Definitional Dilemma

This section of Chapter II entails a discussion of the definitional dilemma of several related but often confused or improperly used terms: cognitive style, learning style, personality style, and thinking style. Linda Golian first introduced the definitional dilemma associated with these four particular terms, collectively,

in her 1998 dissertation research on thinking style differences of senior level library administrators.

Ouellette (2000) noted that research dealing with individual differences supports the concept of different styles of thinking, learning, and personality. Similarly, Riding and Rayner (1999) argued that the relationship between facets of learning style and personality are vital and are interrelated, yet they are distinctive. Because the concepts are noted to differ, then it is most feasible to maintain the idea that the definitions associated with each concept differ as well.

Most recently, Balkis and Isiker (2005) described three distinctive research advancements in the conceptualization of thinking style. They referred to the conceptualizations as the cognition-centered approach, the personality-centered approach, and the activity-centered or learning-centered approach. This current work expands upon the initial information presented by Golian, and incorporates a current review of literature to support and help clarify the definitional dilemma.

### *Cognitive Style*

The initial term defined as a component of the definitional dilemma for this research is that of cognitive style. The concept of cognitive style emerged in the mid-1900s through a unification of various psychological theoretical bases, including behaviorism, Gestalt, and psychoanalytic tradition (Glade, 1993; Golian, 1998; Witkin, Dyk, Faterson, Goodenough, & Karp, 1962). It was Huang (1983), however, who first explicitly detailed the early Greek philosophy related to cognition and the human mind within the context of educational research.

Heineman (1995) noted various researcher's definitions and explanations of cognitive style:

- A psychological term that refers to variations among person's preferred ways of perceiving, organizing, analyzing, or recalling information and experience (Messick, 1976);
- The typical means of problem solving, thinking, perceiving, and remembering (Messick, 1976);
- A consistent way of responding to and using stimuli within learning environments (Claxton & Ralston, 1978);
- Consistent behavioral patterns of individuals within a broad range if individual changeability (Cornet, 1983);
- The way people organize information and experiences (Laschinger & Boss, 1984);
- The method in which individuals process information and prefer to learn (Garity, 1985);
- A classification of learning style theory, focusing on individual behavior resulting from interaction with the environment (Badenoch, 1986).

One earlier definition for cognitive style was offered by Goldstein and Blackman in 1978. They noted that cognitive style is the preferred method(s) individuals use for conceptualizing and organizing the world around them. More recently, Paige Lucas-Stannard (2003) defined cognitive styles as a collection of mental processes that includes awareness, perception, reasoning, and judgment.

As noted by Balkis and Isiker (2005), the cognition-centered approach towards understanding thinking styles was predominant from 1940-1970. This approach focused on individual differences in cognition and perception. According to recent work by Kearsley (2005), cognitive style refers to the preferred way in which individuals process information. It is a personality dimension, as opposed to an aspect concerning ability.

Being a personality dimension, cognitive styles serve to influence attitudes, values, and social interactions. Possessing a particular cognitive style "simply denotes a tendency to behave in a certain manner" (Kearsley, http://tip.psychology.org.). A multitude of definitions for cognitive style exist within the literature. Each of the preceding definitions does bear at least some resemblance to the others, allowing for greater uniformity in application of the term in research and educational contexts.

There have been numerous cognitive styles that have been researched, studied, identified, defined, and explored over the years. A comprehensive literature review surrounding the term was conducted by Cross (1976). Despite the long span of time that has passed since the work, it remains a stronghold in cognitive style research and discussions today. In the Cross review, the work of Messick and Associates (1976), *Individuality in Learning*, was focused upon in order to provide a clearly defined explanation of identified cognitive styles. These dimensions of cognitive style were identified as (a) cognitive complexity versus simplicity, (b) tolerance versus intolerance for ambiguity, (c) field-dependence versus field-independence, (d) narrow versus broad categorization,

(e) focus versus non-focus, (f) reflectivity versus impulsivity, and (g) sharpening versus leveling. Rayner and Riding (1997) later identified 17 separate modes of cognition.

There is uniform agreement among researchers, cognitive scientists, psychologists and the like, regarding the definitions of these seven cognitive styles (Golian, 1998; Guiford, 1980; Hanes, 1991; Kearsley, 2005; Messick, 1984). Each of the definitions remains in accord with the original research by Messick and Associates and will serve to offer clarification for the definitional dilemma associated with this study.

***Seven Commonly Accepted Cognitive Styles***

- Cognitive complexity versus simplicity: differences in how individuals construe the social behavioral world in a multi-dimensional and discriminating way.
- Tolerance versus intolerance for ambiguity: a differential willingness to accept perception at variance with conventional experience(s).
- Field-dependence versus field-independence: a way of approaching the environment in very consistent and analytical terms, entailing a propensity to experience items as disconnected from their background, and to reflect the ability to overcome influences of embedded context.
- Narrow versus broad categorization: a customary inclination for inclusiveness in defining what one finds to be the acceptable range for explicit categories.

- Focus versus non-focus: a reliable and consistent internal pattern of intensity and awareness of attention incorporated in the process of experiencing certain specific events, including individual disparities for encountering events and the time needed for reaching a certain level of awareness.
- Reflectivity versus impulsivity: the pace with which hypotheses are selected and relative information processed. Impulsive individuals tend to proffer the first response that occurs to them, albeit frequently incorrect. Reflective people are more inclined to consider the full range of possibilities before making a decision.
- Sharpening versus leveling: individual variations in the integration of memory. Individuals at the leveling end of the continuum tend to blur memories that are similar and they merge objects or events with similar events recalled from prior experience. Those who are sharpeners, however, are less apt to confound similar objects or experiences and may even judge current events to be less similar to past events than they actually are.

### *Learning Style*

Learning style is the next term explored as part of the definitional dilemma associated with this study. Although cognitive style is widely defined, there is a commonality in the preferred research definition, as originally proposed by Messick and Associates. The same cannot be said for learning style, as there is

no unified theory upon which learning style theory is based (Merriam & Cafferella, 1991).

Heineman (1995) defined learning style as "an interaction of different instructional methods with the various cognitive or personality characteristics of learners" (p. 1). Heineman noted a variety of prior researchers' definitions of learning style:

- A formal attempt to capture what happens within effective communication (Hunt, 1982).
- Social interactions, where students play different roles in the interactions with peers, teachers, and course content (Fuhrman & Grasha, 1983).
- An adaptive and strategic reaction to a specific learning situation, and might depend on such aspects as interest level or anxiety, or as something more stable that is linked with personality and motivation (Ford, 1981).
- The preferred way to learn and the way a person learns best (Kocinski, 1984).

Concentrating on the range of learning style definitions that were seen in the literature, Kolb (1976, 1984) developed a learning style model that was based upon experiential learning theory. He stated that learning styles specifically deal with characteristic styles of learning. Kolb (1984) separated his model into four stages: abstract conceptualization (AC), active experimentation (AE), concrete experiences (CE), and reflective observation (RO).

Kolb (1984) deduced that learning styles were adaptive and could be altered and emphasized as to correspond with individual characteristics and

situational demands. Kolb postulated that the environment produces change in a person's characteristics for acclimation, or the person places themselves in an environment that is consistent with their characteristics. In keeping with this conceptual framework, Kolb developed the *Learning Style Inventory (LSI)* to chart an individual's learning style into four quadrants: accommodator, assimilator, converger, and diverger. The following offers a brief explanation of these four dimensions:

- Accommodators: people who prefer to learn in situations with concrete experiences and active experimentation. These people are apt with carrying out plans, and are often considered to be risk-takers. Such individuals are often found in business and management, and are considered to be the opposite of assimilators.
- Assimilators: people who prefer abstract and reflective modes of learning. These individuals are not as interested in people, and are less concerned with practical use of theorems. Such people are often found in the sciences, or in careers such as teaching, librarianship, ministry, or as university professors.
- Convergers: people who prefer abstract and active modes of learning. These individuals have strength in the practical application of ideas, and tend to be more unemotional, preferring to deal with things as opposed to people. This style is typified in people with engineering and physical science backgrounds.

- Divergers: people who prefer reflective and concrete modes of learning. They tend to be emotional and much vested in people. This style is characteristic of people with humanities and liberal arts backgrounds, with these individuals being the opposite of convergers (Kolb, 1984).

Kolb's work integrated a multitude of available research on thinking styles. Therefore, for the purpose of this study, the research of Kolb was used as the primary foundational example of learning styles. The work of Kolb is also emphasized because of the significance of his learning style research in Harrison and Bramson's development of the Inquiry Mode Questionnaire.

In summary, the concept of learning style is defined as the self-directed persistence (Kolb, 1984) and favored methods that people use to encode incoming information for comprehension, the ability to understand that information, and the ability they have in ease of replicating the information (Messick, 1984). According to Galbraith (2004), learning style encompasses the entire learning situation as well as the learner, and includes the preferred methods in which individuals choose to engage in learning activities, as well as the preferred methods in which individuals' process information.

### *Personality Style*

Before Messick's exploration into cognitive styles, and before Kolb's inquiry into learning styles, Swiss-born psychologist and physician Carl Jung advanced the study into individual psychological dimensions by developing a theory to explain human personality. Jung discerned that human behavior transpired in patterns, and he formulated the theory that all mindful intellectual

activity could be categorized into various dimensions. Jung believed that psychological styles could be used to explain the patterns that individuals prefer to use in activities related to perception, judgment, and behavior (Jung, 1971).

The overall summation of Jung's theory of personality types indicates that all cognizant mental action occurs in two perceptual processes, sensing and intuition, and two judgmental processes, thinking and feeling. Jung forwarded the belief that everyone uses all four of these processes, but that individuals differ in the degree of dominancy for each process. People who use the dominant process primarily in the internal world of thoughts and ideas have an introverted orientation, while people who use the dominant process in an external world of action have an extroverted orientation (Jung, 1971).

Jung's original personality theory consisted of only three dimensions: perception, judgment and personality structure. In the early 1900's, another researcher named Katharine Briggs embarked on the development of a theory about human personality. Jung's original work was translated into English in the 1920's, and it was in 1923 when Briggs recognized the many similarities between her work and that of Jung (Myers-Briggs Organization, 2006). When analyzing Jung's work, Briggs realized that she offered a fourth dimension, attitude towards the outer world. This dimension was present in Jung's work, but wasn't emphasized as strongly as were the other concepts (Golian, 1998).

Briggs and her daughter, Isabel Briggs Myers, added the latter dimension, regarding a person's tendency to be judging and orderly, or perceiving and spontaneous. Further research and cooperation between Briggs and Myers

resulted in the formulation of the *Myers-Briggs Type Indicator (MBTI)* in 1962 (http://www.myersbriggs.org/).

The four dimensions of the MBTI instrument are extroversion versus introversion, sensing versus intuition, thinking versus feeling, and judgment versus perception. The following brief depiction is provided for added clarity and understanding.

- Dimension 1: Sensing versus intuition, one of the first two dimensions identified by Jung, is considered a perception process. In Jung's theory, sensing (S) is the expression used for perception of observable situations by way of the human senses. Intuition (N) is the expression used for perception by way of meaning, relationships and insight.
- Dimension 2: Thinking versus feeling, another of the original two dimensions identified by Jung, is considered a judging process. In Jung's theory, thinking (T) is the expression used for logical decision-making processes and feeling (F) is an expression used for making judgments in regard to a system of personal values that is subjective.
- Dimension 3: Extroversion versus introversion, with the terms created by Jung, is another dimension of personality style. Extrovert (E) refers to a propensity to turn outward, and introvert (I) refers to the tendency for individuals to turn inward. Jung avowed that people express both extroverted and introverted personality tendencies on a daily basis, but that individuals are not equally comfortable in extroverting-action and introverting-reflection.

- Dimension 4: Judging versus perceiving was the dimension that was brought to the surface with the insights from Briggs and Myers. This dimension is associated with the attitude that individuals take concerning the outer world. Judgers (J) have the desire to have things in their lives decided, planned, organized, judged, and managed. Perceivers (P), on the other hand, have the desire to keep things flexible and open to new viewpoints in order to adapt to changing circumstances.

### *Thinking Style*

The final term defined as part of the definitional dilemma for this study is thinking style. Mayer (1983) was the first to note the definitional dilemma associated with this term. Mayer believed the dilemma was due, in part, to the varying contexts in which the term is utilized. The definitions for "thinking style" and "cognitive style" are not necessarily distinct, as some researchers consider thinking style to be one element of the multiple styles of human cognition (Golian, 1998; Kagan & Vigil, 1987). Researchers have offered numerous explanations of and definitions for thinking style, including:

- The way people process information (McLaughlin, 1981).
- "Style is viewed as a product of our total environment consisting largely of our parents and siblings in our early years" (Gregorc, 1985, p. 51).
- "Modes of thought that individuals find comfortable and suitable for themselves" (Sternberg & Grigorenko, 1993, p. 2) also noting that "styles are not abilities…styles are not better or worse – they are different" (p. 122).

- An internal cognitive process that can sometimes be viewed as external behavior (Mayer, 1990).
- The representation and processing of information in the mind (Sternberg, 1995).
- "The self-government of intelligence" and "what a person prefers to do, and how they like to do it" (Cano-Garcia & Hughes, 2000, p. 416).
- "Personal preferences in employing one's intelligence and competence when thinking or dealing with things" (Lee & Tsai, 2004, p. 32).

It was Allport (1937), who originally described thinking style:

> Style represents the most complex and most complete form of expressive behavior. It concerns the whole of activity, not merely special skills or single regions of the body. It has been termed the "personal idiom" in conduct; the French adage has even said, "The style is the man himself." Each painter has a style of his own, so has each composer, pianist, sculptor, dancer, poet, dramatist, actor, orator, photographer, acrobat, housewife, and mechanic. From style alone we may recognize compositions by Chopin, paintings by Van Gogh, and pastry by Aunt Sally. Style enters whenever well-integrated and mature behavior of the personality is involved. (p. 489)

Harrison and Bramson (1977) believed that differences existed between cognition, learning, personality, and thinking styles and began research on systems of inquiry. Studying the works of Churchman (1968, 1971), Buchler

(1971), Jung (1971), Kelly (1963), Kolb (1976), and Neisser (1976), Harrison and Bramson developed their own theory of thinking styles.

Through their own research, and drawing heavily from Buchler and Churchman's work, Harrison and Bramson identified five distinct approaches that individuals entail in perception, making meaning of situations, and in communication. The five approaches are what constitute the five InQ thinking styles: Analyst, Idealist, Pragmatist, Realist, and Synthesist. A brief explanation of the individual nature of each style, as offered by InQ Educational Materials, Inc. (2003) is offered:

- Analysts: Individuals who perceive the world as structured, organized, and predictable. The style is prescriptive and very method-oriented. These people believe that there is, or should be, one best method for accomplishing any task. Enjoyment is found in a rational examination of issues, and such people are likely to use eloquent discourse, with words that are carefully selected and supported by data or general rules. They tend to show disregard for talk that seems irrational or non-focused.
- Idealists: Individuals who experience their reality as a whole into which new data and experiences are assimilated, based on similarities between new information and past experiences and knowledge. This style is assimilative, receptive, and need-oriented. These people believe that the best solution is one that is ideal for the greatest majority. They often prefer personal discussions, with dialogue that is value-laden. They tend to disregard conversation that is conflictive or excessively factual.

- Pragmatists: Individuals who perceive the world as constantly changing and largely unpredictable, requiring an attitude of "whatever works" with regard to solving problems. This style is adaptive, incremental, and results-oriented. These people believe that the shortest route to payoff is most feasible, and that one must focus on tactics and strategies that will result in finalization. Enjoyment is often found in working in complex situations and brainstorming. They tend to express a general disregard for dialogue that is mundane, humorless, or critical in nature.
- Realists: Individuals who are inductive and whose mental modes are derived primarily from observation and their own experience. This style is empirical and task-oriented. These people believe in seeking solutions that meet current needs, and they may do so by screening out disagreement or rushing to over-simplified solutions. They tend to prefer discussions that are both concise and direct. They tend to dislike philosophical discourse, or talk that is overly sentimental or impractical.
- Synthesists: Individuals who focus their thinking on ideas, and in finding connections among things that other people see as having little or no relationship. This style is challenging, speculative, integrative, and process-oriented. These people are interested in change. Their preference for conversation tends to be discussions that are intellectual, philosophical, or argumentative. They tend to have an aversion towards talk that is superficial or simplistic.

### *Summary of Definitional Dilemma*

This section of Chapter II provided multitude of definitions and issues associated with the terms cognitive style, learning style, personality style, and thinking style. For the purpose of this study, the four terms were considered individually unique, with Table 2.1 providing a summary of the definitions incorporated for use in this study. Differentiation of the terms was important in order to dispel the definitional dilemma, offer clarity and distinctiveness to each term, provide for an idiosyncratic base for which to apply research to the area of thinking style, and to offer a basis for which to make conclusions from the findings of this study, as pertaining to female college and university presidents.

**Table 2.1**

***Summary of Definitional Dilemma Terms***

| Term | Definition |
|---|---|
| Cognitive Style | The preferred method(s) individuals incorporate in order to perceive, conceptualize, organize, analyze, and recall information. |
| Learning Style | The cognitive and psychological aspects that serve as personal indicators of how learners interact with and respond to their environment; an adaptive reaction towards the incorporation of new information. |
| Personality Style | Multi-dimensional, consistent, and often times visibly-expressed behavioral patterns and responses to situations or environmental circumstances, specific to the individual. |
| Thinking Style | The favored method(s) individuals use to manipulate and process fixed information so that they can act, reason, make decisions, communicate, deduce, inquire, or create new knowledge; a consistent preference for approaching, solving, and resolving situations. |

## Theoretical Perspectives

This section of the review of literature is a focus of the theoretical perspectives associated with this study. Contingency Leadership Theory will be highlighted first. Contingency models include those of Fielder, situational leadership, Vroom-Yetton Expectancy, and House-Mitchell path-goal. The other major theoretical perspective presented is that of Thinking Style, the primary construct of this research.

### *Contingency Leadership Theory*

Leadership styles cannot be fully explained by modes of behavior. The situation in which the group is operating also determines the style of leadership that is adopted. Several models exist which attempt to understand the relationship between leadership style and situation, four of which are described in the following sections.

#### *Fiedler's Contingency Theory*

Fiedler's Contingency model assumes that group performance depends on leadership style and the favorableness of the situation (Fiedler, 1967). Leadership style can be described in terms of task motivation and relationship motivation. The favorableness of the situation is determined by three things: the degree to which a leader is accepted and supported by members of the organization or institution, the extent to which task structure is clearly defined, and the ability of the leader to manage subordinates through a system of rewards and punishments.

The factors that determine the favorableness of a situation are commonly referred to as Leader-Member Relations, Task Structure, and Position Power.

Pugh (1990) and Vecchio (1988) noted that high levels of these three factors allow for the most favorable working situations. They also stated that relationship-motivated leaders are most effective in moderately favorable situations, with task-motivated leaders most effective at either end of the scale. Fiedler suggested that it could be easier for leaders to change their situation to achieve effectiveness, rather than to attempt to change their leadership style.

***Hersey-Blanchard Situational Leadership Theory***

This theory suggests that leadership style should be coordinated to the experience, knowledge, and understanding of the subordinates (Pugh, 1990; Vecchio, 1988). Experience is measured in relation to a specific task, and has two parts: psychological maturity and job maturity. Psychological maturity is the employee's self-confidence, aptitude, and willingness to accept specific responsibility. Job maturity is comprised of the employee's relevant job skills and technical knowledge (Pugh, 1990; Vecchio, 1988). Pugh (1990) and Vecchio (1988) further acknowledged that as the maturity of employees increases, the leadership style of those in control should be more relationship-motivated as opposed to task-motivated.

***Vroom-Yetton Expectancy Model***

The Vroom-Yetton Expectancy Model suggests that the leader should select a leadership style for making decisions (Vroom & Yetton, 1973). The five decision-making styles noted by Vroom and Yetton include: Autocratic 1, Autocratic 2, Consultative 1, Consultative 2, and Group 2, respectively. The Autocratic 1 style is used when the problem is solved based on information that

was already available. It is appropriate to use the Autocratic 2 style when supplementary information is acquired from a group before the leader makes a final decision. The Consultative 1 approach entails a discussion of problems with workers on an individual basis, and the Consultative 2 approach involves having a group discussion with employees before a decision is formulated (Vroom & Yetton, 1973).

***House-Mitchell Path-Goal Theory***

It is suggested in the House-Mitchell Path-Goal theory that motivation, performance, and satisfaction of a group can be affected by the leader in a variety of ways, including: rewarding achievement and performance goal attainment, clearly explaining performance goals and ways to achieve these goals, and removing potential performance obstacles (Pugh, 1990; Vecchio, 1988). Pugh (1990) and Vecchio (1988) further stated that these tasks can be accomplished if the leader adopts a certain leadership style, depending on the situation. Potential leadership styles that could be most effective include (a) direct leadership, (b) supportive leadership, (c) participative leadership, and (d) achievement-oriented leadership.

Directive leadership is more aptly suited to ambiguous situations and entails the leader giving explicit advice or directives to workers, and recognizing specific guidelines or regulations. Supportive leadership entails a display of sensitivity to workers needs and the establishment of good rapport within the group, and increases group satisfaction, particularly in stressful workplace situations. Participative leadership is when decisions are based on group

consultation and information is shared within the group. Achievement-oriented leadership involves setting challenging goals and encouraging high performance, with the leader demonstrating that they have confidence in the ability of the group (Pugh, 1990; Vecchio, 1988).

## *Thinking Style Theoretical Models*

There were three major researchers whose work served as the foundation for the thinking style theory espoused by Harrison and Bramson (1982). These researchers are C. West Churchman, Justus Buchler, and Carl Jung. This section concerns the theoretical perspectives associated with this study highlights the works of these theorists.

### *Churchman*

C. West Churchman (1968, 1971) focused his efforts in identifying thinking methodologies that could be attributed to selected philosophers and historical thinkers. Churchman restructured the ideas of such people into five distinct inquiry systems. These systems, to be discussed, are Hegelian, Kantian, Leibnizian, Lockean, and Singerian.

***Hegelian Inquiry System.*** The Hegelian System forms the basis for the Synthesist thinking style of the InQ, and is based on the ideas of German philosopher Georg W. F. Hegel (1770-1831) (Churchman, 1971). According to this focus of thought, only the mind is real, because the world is in a constant state of change.

Hegel believed that the acquisition of knowledge was the result of discovery. He also believed that humans do not impose their order on nature, but

rather, discover the order and form of our natural environment (Barry, 1977). The process of subjectivity is a key concept in the Hegelian System, simply because all possibilities must be scrutinized in order for one to believe in a particular point of view (Golian, 1998).

***Kantian Inquiry System.*** The Kantian System forms the basis for the Idealist thinking style of the InQ, and is based on the thoughts of German philosopher Immanuel Kant (1724-1804) (Churchman, 1971). Kant believed that people perceive situations and base their knowledge on how phenomena appear to them, which may or may not be the way they really are.

In this system of inquiry, it was postulated by Kant that thinking must have prior knowledge and experience as a foundation. Kant believed that all humans, in thinking, have the sense of knowing when something is in place and when it is not (Churchman, 1971). Kant's theory noted that people are more than passive in the ability to receive sensory experiences, and that we take this sensory data, and based upon our prior experiences, fashion this information into conceptual molds we already possess. It is through an awareness of the relationship between new information and prior stored information that the mind has the ability to make relationships between and among the data, and create knowledge (Barry, 1977).

***Leibnizian Inquiry System.*** The Leibnizian System forms the foundation of the Analyst thinking style of the InQ, and is based on the idea of German philosopher, Gottfried Wilhelm Leibniz (1646-1716). In this system of inquiry, knowledge is a very methodical process, which develops from simple into

complex matters (Churchman, 1971). The Leibnizian System necessitates information that can be authenticated and confirmed, and that can produce unambiguous results for the individual thinker.

For these thinkers, their reality is very rational, predictable, and is grounded in theory that is reliable and inherently definitive. This type of thinker constructs their truth from beliefs that can be divided down into decipherable sections (Shank, 1986). The Leibnizian System "is inquiry based upon deductive reasoning to arrive at the truth or reality" (Golian, 1998, p. 68).

***Lockean Inquiry System.*** The Lockean System forms the basis for the Realist thinking style of the InQ, and is based on the work of British Realist John Locke (1632-1704) who trusted that all ideas came from one's experience (Churchman, 1971). In this system of inquiry, there are no presumed notions regarding the world, and knowledge is said to be formed through the processes involving the human sensory systems of seeing, tasting, touching, and smelling, as well as through personal experience. This type of thinker does not work well with theoretical data or information that is abstract in nature (Golian, 1998).

***Singerian Inquiry System.*** The Singerian System forms the basis for the Pragmatist thinking style of the InQ, and is grounded in the ideas of a more modern philosopher, Edgar Arthur Singer, Jr. (1873-1955) (Churchman, 1971). Shank (1986) noted that this was the inquiry system that appeared to be the least developed by Churchman, and is based in the science of physical measurement.

Churchman (1971) noted that metrology (measurement) requires two conceptual decisions, the unit and the standard. The unit can be arbitrary, but the

standard consists of a defined set of operations. Within the Singerian System, progress in thought is attained by rejecting the notion to be complacent, and in continually endeavoring to improve upon accepted standards (Shank, 1986). Refinement is a vital concept (Golian, 1998). In order to achieve refinement, information is gathered collectively so that an interdisciplinary approach to solving problems can take place. The combination and continual updates made to our knowledge produces a pragmatic view of one's reality (Golian, 1998).

***Buchler***

Through his research, Buchler (1961) developed five manifest philosophical thinking methodologies. He sought to determine what it was that made various methods "methodical". He argued that prior scholarly discussion of thinking was, in essence, a discussion of a particular methodological belief.

Buchler believed that an individual's thinking style was a power held by that individual in which they manipulated various ideas and situations with a purpose in mind, and he based his methodology on a "reproducible order of utterance" (Golian, 1998). Similar to Churchman, Buchler based his work upon a variety of other works, including prominent thinkers and philosopher like Bentham, Coleridge, Descartes, Dewey, and Whitehead.

***Bentham.*** Jeremy Bentham (1748-1832) was an English philosopher, economist, and theoretical jurist who was noted as a leader in the area of Unitarianism teachings. Bentham's method is tantamount to the idea of methodization, or arrangement (Buchler, 1961). He suggested that there are three essential elements that are intrinsically connected, and that arrangement or

methodization is applied in order to cause a particular and useful outcome. The three essential elements, invention, imagination, and abstraction, require that the individual exercise processes of logic and well-understood method, in order for the outcome to be successful.

***Coleridge.*** Samuel Taylor Coleridge (1772-1834) was a poet and philosopher of the English Romantic Period of the early 19th Century. His system is based on method as an avenue of transition, with transition being an orderly progression of smaller advancements. Coleridge believed that individuals try to classify and arrange every method we attempt, and that in doing so, we move forward.

***Descartes.*** Rene Descartes was a French scientist, mathematician, and philosopher. Famous for the quote "I think, therefore I am" (Golian, 1998), his methodology is based on the search for reason and truth in the sciences. Descartes believed that in quest for truth, people must focus themselves entirely towards the objects of their minds, in order for the discovery to take place. He strongly believed that people attained method by first attaining order of all objects and situations in their world.

***Dewey.*** John Dewey (1859-1952) was an American educator and philosopher who is considered the founder of pragmatism and is also viewed as a pioneer in functional psychology (Buchler, 1961). Dewey's thinking methodology was synonymous with intelligence, more specifically, operational intelligence. Dewey believed that intelligence was directed towards problem

solving, and in doing so, served to modify and resolve issues and uncertain situations.

***Whitehead.*** Alfred North Whitehead (1861-1947) was an English philosopher and mathematician who taught at Harvard University in the 1920's. He was a professor of metaphysical theory, and believed that people realize their true being through processes of assimilation and manipulation. His thought was that the most basic expressions of one's mode of thinking were reflected in the processes of assimilation and manipulation and that actual thinking occurs when individuals understand their role in both of these acts.

### *Jung*

Carl Gustav Jung (1875-1961) was an investigator of human behavior and personality style, and is another researcher whom Harrison and Bramson looked toward when they sought to develop their thinking style instrument. Jung's theory suggested that all human conscious mental activity transpired in four separate dimensions: extroversion versus introversion, sensing versus intuition, thinking versus feeling, and judging versus perceiving. The dimensions of sensing versus intuition and thinking versus feeling are associated with Thinking Style Theory.

Jung (1971) believed that thinking versus feeling was a judgment process, in that thinkers incorporate a consistent decision-making process and feelers make decisions subjectively, based primarily on their values. He believed that sensing versus intuition was a perception process, in that sensers perceive situations that

they observe in making their decisions, whereas intuitors make decisions based on inferences from personal thoughts and relationships.

### *Harrison and Bramson*

Harrison and Bramson's research into thinking styles was based on the idea that thinking was a continual process of inquiry and problem solving. Their thinking style theory was based primarily on the works of Churchman (1968, 1971), Buchler (1971), and Jung (1971), discussed in the prior sections.

After Harrison and Bramson determined that thinking was a consistent preference for approaching, solving, and resolving situations through the process of inquiry, they searched for an instrument that would assist in identifying differences in thinking styles. Using the five dimensions of thinking that were identified by Churchman and Buchler, Harrison and Bramson created the InQ.

## *InQ Thinking Style Conceptualizations*

The InQ is constructed around five primary thinking style conceptualizations. These dimensions of thinking include Analyst, Idealist, Pragmatist, Realist, and Synthesist. Each person incorporates all five of the thinking style modes to a certain degree, but thinking style individuality depends on the extent to which people approach data, perceive problems, and make decisions. The InQ serves to quantify differences in thinking style modes, by measuring behavioral actions of everyday life (Harrison & Bramson, 1982).

### *The Analyst*

Analysts are characterized by their use of logic and desire to find the one best way to solve a particular problem. They tend to use models and formulas and

are often times very successful at intricate planning and model building. Analyst individuals place great emphasis on technique and accuracy, and are comfortable in situations that are structured and predictable. Hindrances associated with this style are that individuals may appear overly cautious, obstinate, or dogmatic. In addition, they may choose to ignore information that does not fit their chosen model (Harrison & Bramson, 1977).

The Analyst style is characterized by an emphasis on formal logic and analysis, in addition to emphasizing theory as the basis for decisions (Bruvold, et al., 1983). According to Golian (1998), this style reflects the fundamentals of the Western intellectual system.

***The Idealist***

Idealist individuals are exemplified by the way they seek ideal solutions. Idealists are open to an expansive range of viewpoints, and are concerned with values and standards. They place emphasis on relationships and cooperation and are good in unstructured situations and those circumstances in which values are a factor. Nevertheless, Idealists' behavior may also be typified by their excessive determination to discover the perfect solution or their disregard for data deemed objectionable (Harrison & Bramson, 1977).

The Idealist thinking style is illustrated by people who tend to view situations holistically, with a heavy focus on the process rather than the facts involved (Bruvold, et al., 1983). This style is strongly associated with conventional societal values in philosophy, government, and the political community (Golian, 1998).

### *The Pragmatist*

Pragmatists are epitomized by their flexibility, adaptability, and dealings in complex situations. They tend to do whatever works and look for shortcuts that will provide them with immediate results. Impediments associated with this style of thinking are that individuals may appear excessively compromising and they may not consider long-range planning (Harrison & Bramson, 1977).

The Pragmatist style of thinking is distinguished by an individual's emphasis on effectiveness, and in moving toward results that bring resolution to problems of immediate concern (Bruvold, et al., 1983). The Pragmatist style is commonly linked with non-traditional, experimental, and progressive thinking and actions (Golian, 1998).

### *The Realist*

Realists consider reality to be what is seen or experienced. They tend to acknowledge the idea that people will agree based on reality, and emphasis is placed on results as opposed to relationships. Often times, decisions are made based on facts and expert opinion. Realists are good at simplifying and their preference is for distinctive situations and unambiguous objectives. Some adversities associated with this mode of thinking are that Realists may ignore disagreement or they may disregard fundamental issues (Harrison & Bramson, 1977).

The Realist style is exemplified by persons who place emphasis on facts and data that can be identified directly, and on solutions that are practical and effective (Bruvold, et al., 1983). The Realist style is directly associated to

consideration and activity in economics and production, considered the empirical foundations of society (Golian, 1998).

### *The Synthesist*

Synthesist are individuals who may be characterized by the way in which they perceive similarities in items or ideas that are apparently different. They revere disagreement and verbal discord, and are attracted to change. These people are at ease in contentious circumstances and are skillful in preventing premature conformity to situations. Some adversities noted with the Synthesist mode of thinking, however, are that these individuals tend to be argumentative and may be uncommitted (Harrison & Bramson, 1977).

The Synthesist thinking style is typified by incorporating opposing viewpoints in finding solutions to problems, and in focusing on abstract data that is deemed pertinent to the situation at hand (Bruvold, et al., 1983). Harrison and Bramson speak of the creativity that often results from conflict that the Synthesist often entertains.

## *Distribution of InQ Thinking Styles*

Within the United States, representative distribution of thinking styles reveal that 50% of the population favor a singular thinking style, 35% favor two thinking styles, and 15% favor three or more thinking styles (Harrison & Bramson, 1982; Svendsen & Svendsen, 1995). Persons with a disposition towards using only one of the thinking styles as identified by the InQ are referred to as “ideal” thinkers for that specific style.

Research conducted by Harrison and Bramson (1982) indicated that the three most common thinking styles in the United States are Idealist, Analyst, and Realist. The Harrison and Bramson research also identified 10 possible thinking style combinations that are utilized by the approximately 35% of individuals who favor a dual-thinking disposition. These combinations are (a) Synthesist-Idealist, (b) Idealist-Realist, (c) Synthesist-Pragmatist, (d) Pragmatist-Realist, (e) Synthesist-Realist, (f) Analyst-Synthesist, (g) Idealist-Pragmatist, (h) Analyst-Pragmatist, (i) Idealist-Analyst, and (j) Analyst-Realist.

Svendsen and Svendsen (1995) supported Harrison's and Bramson's assertion regarding dual-thinking style combinations. They stated that among the 10 possible combinations identified by Harrison and Bramson, Analyst-Idealist, Analyst-Realist, and Synthesist-Idealist are the most commonly observed amalgamations of thinking style.

There are two additional types of thinkers identified by the InQ: the three-way thinker and the flat thinker. Studies have indicated that less than 2% of all people, and 4% of all multiple thinkers, share the rare occurrence of being a three-way thinker (Harrison & Bramson, 1985; Svendsen & Svendsen, 1995). Flat thinkers have InQ scores that are identified by reasonably equivalent scores in all five thinking style categories. Flat thinkers comprise 26% of the multiple thinker population (Svendsen & Svendsen, 1995).

**Review of Related Previous Research Studies on Thinking Styles**

Numerous studies have been conducted with regard to thinking styles. Some studies incorporated the InQ instrument, while other researchers chose

alternative instruments. This review of previous research discusses studies conducted on thinking style, regardless of instrumentation. Studies within and outside of Education are discussed, as many connections and implications within the studies are applicable toward this current study.

### *Studies Outside of Education*

Several studies on thinking styles have been conducted outside the education realm. Five pertinent studies were identified between 1998 and 2002, including Joanna Rock's (1998) research on thinking styles and job task performance, as well as Dai and Feldhusen's (1999) study, which reported that thinking styles were different from personality traits. Knishbacher (1999) studied the relationship between learning style and thinking style. Kaufman (2001) explored the thinking style differences of creative writers and student journalists. Hommerding (2002) investigated thinking style preferences among Florida's public library directors. These five identified studies are discussed below.

#### *Rock (1998)*

Joanna Rock (1998) attempted to extend the work of Sternberg in demonstrating a relationship between thinking styles and job-related task performance. Rock postulated that if the thinking style of participants was matched to the thinking style that would be most appropriate for a given situation, that the performance of the individual would be higher than if there was no thinking style match. A total of 138 students in an introductory psychology course participated in the research. There were 51 males, 75 females, and 12

participants with undisclosed gender. The study was conducted through the use of a lab in a camp counselor job application process.

Intelligence, thinking style, self-efficacy, self-monitoring, and performance were measured using various instruments. Data analyses indicated that there was moderate support for the research hypotheses. The researcher indicated that flexibility in the use of thinking styles interceded performance, and that individuals who were flexible and able to adapt their thinking style to a given situation could perform successfully, regardless of whether their dominant style matched the thinking style demands of the particular task.

***Dai and Feldhusen (1999)***

Sternberg and Wagner's Thinking Styles Inventory (TSI) was developed within the framework of Sternberg's (1988) theory of mental self-government and is a widely used research instrument. David Yun Dai and John F. Feldhusen (1999) worked to examine internal, discriminant, and convergent validity of the instrument in assessing the thinking styles of gifted students. Participants in the research were 96 summer residential adolescents. Fifty-eight of the participants were male, and 38 were female, all between the ages of 12 and 17.

The first question addressed whether conceptually opposite thinking styles negatively correlated with each other. The second question addressed whether thinking styles correlated with the dimensions of extroversion-introversion and neuroticism-emotional stability as first addressed by the Junior Eysenck Personality Inventory. Participants were administered both the Thinking Styles Inventory and the Junior Eysenck Personality Inventory.

Results from the study indicated that thinking style measures are different from conventional measures of personality traits. The results did provide evidence of external discriminant validity of the instrument, but only partial support for internal validity. Much of the research results contradicted results attained by Sternberg and Wagner in their original research. The suggestion was made by Dai and Feldhusen that further research be undertaken to clarify thinking styles, as assessed by the TSI.

***Knisbacher (1999)***

Anita Marshall Knisbacher (1999) investigated the relationship between learning style and thinking style, pertaining to instructional presentation preference, preferred instructional delivery platform, and occupational choice. The sample for the study included 100 participants in working in computer science and linguistics fields within a large government agency in Washington, D.C. Respondents completed Kolb's Learning Style Instrument (LSI) and the Hermann Brain Dominance Instrument (HBDI).

Data analysis disclosed no significant relationship between learning style and thinking style with regards to instructional delivery platform. There was significance noted between learning style and thinking style with occupational choice and instructional presentation preference. The researcher noted that the information concerning the significance between thinking style and occupational choice could be used to create a better match between job requirements and work or team assignments.

***Kaufman (2001)***

James Corey Kaufman (2001) sought to determine whether difference exist between student creative writers and student journalists with regards to thinking style. The researcher focused on Sternberg's theory of Legislative, Executive, and Judicial thought, as well as Bruner's theory of Narrative and Paradigmatic thought. A total of 81 students participated in the study by writing sentences to describe a series of photographs and then taking both Sternberg's Mental Self-Government Thinking Styles Inventory (MSG-TSI) and the NEO Personality Inventory, which was developed by Costa and McRae in 1992.

Data analysis resulted in some findings of significance. One notable difference in thinking style was noted with regard to type of writer (creative or journalistic). Sex of the student, however, when interacted with type of writer, indicated non-significant findings. There was an "unexpected interaction" (p. 5) that emerged between gender and type of writer, however. For males, "the hypothesized difference in paradigmatic scores was found, with journalists significantly outscoring creative writers on this thinking style" (p. 5). A trend in the opposing direction was noted for female participants, however, but that difference was not as significant as the variation seen in the males.

***Hommerding (2002)***

Similar to Golian's work on thinking styles of senior library administrators, which is cited frequently in this study, Leroy Hommerding (2002) focused his research on the thinking style preferences among public library directors in Florida. He conducted a mixed method study, first administering the

Sternberg-Wagner Thinking Style Preferences Questionnaire (1991) to 144 public library administrative unit directors in the state of Florida, and then conducting telephone interviews with 15 randomly selected participants. A total of 126 individuals returned the questionnaire, and 124 surveys were utilized for quantitative data analysis.

Findings from the study indicated that Florida library directors had a profile of thinking styles rather than a single style, and that there was notable difference between preferences for each of the 13 thinking styles assessed by the Sternberg-Wagner instrument. Qualitative analysis of the interviews corresponded with the statistical data analysis, indicating differences in thinking styles based on gender, and supporting the concept of a flat thinking style preference for library directors.

### *K-12 Studies*

Research pertaining to thinking styles that were conducted in the realm of K-12 education discussed next. Seven such studies, with a primary focus on the K-12 education environment, were identified between 1987 and 1992. Studies by Cleary (1987), Davis (1990), Adams (1991), Cicchetti (1991), Tashkandi (1991), Bowe (1992), and Sniderman (1992) are discussed in the following section.

After 1992, there was a near decade-long time gap of thinking style research in K-12 education, before research re-emerged with work by Zhang in 2001. Zhang, whose work entails research conducted primarily in Hong Kong, continues to be influential in thinking style research. Selected Zhang studies are overviewed in this section.

***Cleary (1987)***

Michael James Cleary (1987) served to determine the thinking styles of a group of teachers and their university supervisors. A total of 122 teachers and 31 supervisors participated. Participants completed the Level I: Life Styles Inventory, developed by Human Synergistics in 1908. The instrument served to identify 12 different thinking patterns, through the use of 240 words and phrases that assessed attitudes, behaviors, and reactions. Thinking style profiles were then developed for the participants, through the use of standard deviation scores on the 12 scales.

Responses from 72 teachers and 25 supervisors were included in data analysis. Through the use of MANOVA and ANOVA statistical testing, the researcher concluded that there were strong orientations toward thinking styles that were humanistic, self-actualized, and achievement oriented. The only thinking style where a significant difference was found between the teachers and the university supervisors was in that of the "conventional" thinking style.

***Davis (1990)***

Ted Michael Davis (1990) sought to describe the thinking styles of secondary school principles and to examine the relationship between thinking styles and perceived principal effectiveness. A total of 150 Missouri high school principals were randomly selected to participate in the study. Participants completed the Human Information Processing Survey (HIPS) and a demographic data form. In addition, participating principals were asked to have five teachers

from their school complete a questionnaire related to the principal's perceived effectiveness.

Results from the study indicated that secondary school principals exhibited a marked preference for particular thinking styles. Also, the scores for perceived effectiveness were consistent for each principal. In addition, there were no significant relationships found between thinking styles of the principals and their placement in the four possible quadrants of the perceived effectiveness questionnaire.

***Adams (1991)***

Leroy Adams (1991) investigated the thinking styles of women principals. The study examined whether thinking styles varied significantly according to particular personal and demographic characteristics. A total of 300 elementary and secondary public school principals in the eastern United States served as the sample for the study. A total of 178 responded to the Level I: Life Styles Inventory and a demographic survey, 121 elementary school principals and 57 secondary school principals.

Statistical analysis indicated that the participants' scores did not correspond with the survey instrument prior research data with regards to thinking style. In this study, the principals scored considerably lower in the avoidance aspect of their thinking style and higher in such characteristics as humanism, affiliation, perfectionism, achievement, and self-actualization. One rationale offered for this disparity was that previous research on schools tended to focus on the experiences of the men who typically held these positions. This offers

evidence for more sex-based differences in thinking styles, as opposed to career choice inclinations.

***Cicchetti (1991)***

Michael T. Cicchetti (1991) explored the relationship between thinking styles and training preferences of educational and corporate leaders. Participants included 76 educational leaders from five Connecticut school districts, and 76 corporate leaders who at Aetna Life & Casualty in Hartfort, Connecticut.

Brain dominance was ascertained through use of the Herrmann Brain Dominance Instrument. Training preferences were determined through use of a survey created by the researcher. Findings from the study did not correlate with two previous similar studies, as data analysis indicated significant differences between brain dominance mean scores between the two groups of participants. There were no significant differences found within each group.

There were significant differences found between brain dominance mean scores of males and females. Men tended to prefer left brain thinking modalities, while females were more right-brained. The researcher noted that few thinking style differences were noted between corporate and education males, but that moderate differences were found between education and corporate females.

***Tashkandi (1991)***

Sarah Mansour Tashkandi (1991) compared the leadership thinking styles of male and female secondary school principals in an attempt to determine whether any statistically significant gender differences existed in thinking styles.

Tashkandi posited that the differences, if any, may affect the selection of principals in the two major urban school districts that she studied.

Data was collected using the Level I: Life Styles Inventory, which served to identify twelve different thinking patterns. Demographic data with respect to sex, educational background, school size, school type, salary, and age was also requested from these women principals.

Results from the study indicated that there were some significant differences for the leadership thinking styles of male and female secondary school principles, when measured against the various independent variables. Ancillary findings indicated that males were selected with fewer years of experience than female counterparts and males earned higher salaries than females. This was evidenced despite the fact that a greater portion of the females held advanced credentials than did their male counterparts.

***Bowe (1992)***

Another to study the leadership thinking styles of administrators was Marie Antionette Bowe (1992). Her study assessed the leadership thinking styles of school administrators and students enrolled in educational administration programs. She was another who selected the Level I: Life Styles Inventory as the assessment instrument. The survey was administered to 80 practicing administrators and 75 students of educational administration.

Descriptive and inferential statistics were used to analyze the data, including the use of t-tests and ANOVAs. Results from data analysis indicated significant differences in the leadership thinking styles of administrators and

students of administrations. Males scored significantly higher in Affiliative, Approval, Dependent, Avoidance, and Competitive thinking styles, all of which are deemed counterproductive to effective leadership behavior, as noted by the researcher's literature review.

***Sniderman (1992)***

Ronald Sniderman (1992) investigated the relationship between leadership styles of practicing and aspiring school administrators. Of significance was to determine the relationship of leadership styles to thinking styles via brain preference. The first objective was identify the leadership styles and thinking styles of both practicing and aspiring school administrators. Next, the study sought to determine if a relationship between styles did exist.

Participants completed the Styles of Leadership Survey and the Herrmann Brain Preference Survey. Results from the study indicated a correlation between leadership style and thinking style of school leaders via brain preference. There was, however, no significant difference found between aspiring and practicing administrators. This finding provided further evidenced-based data that promoted the concept of a relationship between occupational choice and thinking style.

***Zhang (2001)***

In a 2001 study, Zhang examined the relationship between teaching approaches and thinking styles in teaching. This study paralleled previous explorations of students' learning approaches and thinking styles in learning. In this study, 76 in-service teachers from Hong Kong responded to the Approaches to Teaching Inventory (ATI) (Trigwell & Prosser, 1996) and the Thinking Styles

in Teaching Inventory (TSTI) (Grigorenko & Sternberg, 1993) as well as to an array of questions designed by Zhang in attempt to assess participants' perceptions about their individual work environments.

Data were collected from 26 male and 50 female in-service teachers from the Faculty of Education of The University of Hong Kong. Data analysis indicated a significant corresponding relationship between thinking styles in teaching and approaches to teaching. Zhang also presented findings that indicated context dependent relationships between teaching approaches and thinking styles in these Hong Kong teachers.

### *Higher Education Studies*

The third section reviewing previous research on thinking styles includes several studies that focused on higher education. McLaughlin (1981) investigated relationships between thinking styles and interpersonal reasoning. Scott (1989) studied California Community college leaders thinking styles and behavioral practices. Lensky (1991) explored gender differences in thinking styles of college students and their parents. Ermel (1992) considered the relationship between thinking styles and field independence. Tucker (1999) researched thinking styles of accounting students at various institutions of higher education. Cano-Garcia and Hughes (2000) studied the interrelationships of college students learning styles and thinking styles, as to whether this could predict academic achievement. Zhang (2002) explored the relationship of thinking styles to modes of thinking. Lee and Tsai (2004) investigated the effects of thinking styles on learning transfer. Finally, Balkis and Isiker (2005) investigated the relationship between

thinking styles and personality types. A synopsis of each of these nine scholarly studies is presented in the following section.

***McLaughlin (1981)***

Ann Marie McLaughlin (1981) investigated the idea of how thinking styles influence aspects of social cognition. Also studied was the extent to which verbal mediation and imagery processing instructions affected the interpersonal reasoning performance of various thinking style groups. A total of 64 undergraduate students with predominant thinking styles were selected to participate in the study. Participants were evenly divided by sex, had differing ethnic backgrounds, and studied in a variety of educational fields.

Results from the study indicated that thinking style groups did not differ in their interpersonal reasoning performance. More intuitive thinkers did describe more emotional responses than their analytic counterparts, and females more so than males. Overall, however, individuals were able to adapt to whatever situation or circumstance with which they were confronted.

***Scott (1989)***

Mary Elizabeth Scott investigated thinking styles and designated desirable leadership behavioral practices of California community college leaders. The Human Information Processing Survey (HIPS) was utilized to determine information processing preference (left-brained, right-brained, integrated, or mixed). The Leadership Practices Inventory-Self (LPI-S), and the Leadership Practices Inventory-Other (LPI-O) were used to measure leadership competencies.

A total of 48 community college presidents participated. Analysis of the HIPS indicated that 74% of the respondents utilized a whole-brain processing approach within their working environment. In addition, 81% of respondents utilized the entire range of five LPI-S leadership practices at a moderate or higher level. Overall, it was noted that participants had thinking styles that were mixed and integrated.

***Lensky (1991)***

Another to study thinking styles was Helene Robin Lensky (1991). In master's thesis research, she studied gender differences in the perceived thinking styles of college students and their parents. Lensky utilized Epstein and Meier's Constructive Thinking Inventory, developed in 1989, to address both constructive and non-constructive thinking forms. The survey instrument was administered to 118 undergraduate students and their parents by mail.

Results from the study indicated that students portrayed their parents as thinking in more constructive fashions than themselves. The parents reported themselves to be less constructive in thinking form than what was perceived by their children. The only significant gender difference was noted in males' higher emotional coping scores. There were notable differences held among various dyadic family combinations (mother-daughter, mother-son, father-daughter, and father-son) with each person in the combination perceiving the other member differently than the other individual self-reported.

***Ermel (1992)***

Diana M. Ermel (1992) utilized the Sternberg's Thinking Style Inventory (TSI) and the Group Embedded Figures Test (GEFT) in attempt to investigate the relationship between legislative, executive, judicial, external, and internal thinking styles and field independence. The survey instruments were administered to 130 undergraduate education and vocational technical educational students at the University of Regina (Canada).

It was hypothesized that legislative style thinkers would be more field independent than executive style thinkers. It was also hypothesized that internal style thinkers would be more field independent than external style thinkers. All findings with regards to the primary hypotheses were found to be non-significant, indicating that there was no considerable relationship between thinking style and field independence. Secondary statistical analysis indicated a statistically significant negative correlation between some thinking styles and field independence, as determined by the GEFT.

***Tucker (1999)***

R. Wes Tucker (1999) was another researcher to incorporate the Sternberg-Wagner Thinking Style Questionnaire in dissertation research. Tucker studied thinking styles of accounting students at both a major university and a community college, both located in the Pacific Northwest. The questionnaire was administered to a total of 235 students, during an accounting class. The research questions associated with this study attempted to identify whether differences in

thinking style exist with regard to participant age, sex, major course of study, stage of study, and institutional type.

Results from the study indicated significant differences between thinking style scores and student's age, sex, major, and stage of study. There were no significant differences depending upon institutional type. This provided additional evidence for connections between thinking style and chosen occupational field, as well as providing additional substantiation for sex-based stylistic differences.

***Cano-Garcia and Hughes (2000)***

The study by Cano-Garcia and Hughes (2000) sought to examine whether college students' learning styles and thinking styles were interrelated, and if the styles could predict academic achievement. A total of 210 students in first year psychology degree programs in Spain participated in the study. Women comprised the majority of the sample, with a total of 168. There were 42 participating males.

Each participant completed Kolb's Learning styles Inventory (LSI) and the MSG Thinking Styles Inventory. Results indicated that thinking styles and learning styles were interrelated and that student academic achievement was influenced by their styles.

***Zhang (2002)***

In a 2002 study, Zhang explored the relationship of thinking styles to modes of thinking. A total of 371 freshman students from the University of Hong Kong participated in the research during the university's orientation seminar.

Students represented all of the university's major educational arenas: Architecture, Arts, Dentistry, Education, Engineering, Law, Medicine, Science, and Social Science. The students responded to the Thinking Styles Inventory, developed by Sternberg and Wagner (1992), and to the Style of Learning and Thinking questionnaire, which was developed by Torrance, McCarthy, and Kolesinski (1988).

A major finding from the study was that creativity and complex thinking styles held statistically significant correlations with more holistic thinking types but were significantly negatively correlated with the analytic thinking mode. Overall, there were significant relationships between thinking styles and modes of thinking, all of which were consistent with the theoretical prediction noted by Zhang. The study focused on implications for education and research, and in this regard, Zhang noted that "Teachers can foster creativity by tapping talents assumed to be generated from different modes of thinking and by accommodating to and challenging the development of multiple thinking styles" (p. 256).

***Lee and Tsai (2004)***

C. I. Lee and F. Y. Tsai (2004), from the Institute of Computer Science & Information Education at the National Tainan Teachers College in Taiwan, studied the effects of thinking styles on learning transfer. The study utilized an incorporation of project-based learning with use of the internet in multiple fifth grade classrooms. In their study, they hypothesized that, depending upon the networking environment, there would be significant differences in learning transfer, depending upon thinking style, and that certain children with particular

thinking styles would perform at a superior level to other students with particular thinking styles. Students were divided into four distinct groupings in order to evaluate the said effects.

Results from the study indicated, among other things, that there were statistically significant differences in learning transfer between only two groups of different thinking styles, and this difference was only noted on one aspect of learning transfer. The mixed thinking style group performed at a superior level to the Legislative thinkers on both aspects of learning transfer, but no other thinking style group differentiations were noted at a level of statistical significance.

***Balkis and Isiker (2005)***

Turkish researchers Murat Balkis and Gulnur Bayezid Isiker (2005) explored the relationship between thinking styles and personality types. Participants were 367 third-year students at a Turkish university. A total of 212 females participated, along and 155 males. The students studied in a variety of disciplines, with 31.8% in Natural Sciences, 28.5% in Social Sciences, 28.5% in Fine Arts, and 11.2% in Foreign Languages.

Participants responded to both the Thinking Styles Inventory (TSI) (Sternberg & Wagner, 1992) and the Self-Directed Search (SDS) (Holland, 1994), which is a 228-item inventory that serves to assess personality type. Results from the study indicated that there were significant positive relationships between thinking styles and personality types. Some relationships were found significant at a .01 alpha level, others at a .05 level. Analysis of t-tests indicated that there were “meaningful statistical relationships between thinking styles, gender

differences and fields of study for all participants" (p. 290). It was also revealed that Social Science students utilized more conservative styles of thinking, compared to students in other major disciplines.

## Review of Research Studies Using the InQ

The first dissertations using the InQ began to appear in the literature in the early 1980's. This section will discuss notable studies using the InQ, both outside of education and in the contexts of K-12 education and higher education. Studies include dissertations, master's theses, post-doctoral research, and other scholarly research.

### *Studies Outside of Education Using the InQ*

Outside the field of education, two dissertations have been completed in which the researcher used the InQ. Malone (1992) studied the relationship of thinking styles of local law enforcement managers and their supervisors. Yarbrough (1995) investigated the relationship between thinking styles and perceptions in an organizational context.

#### *Malone (1992)*

Marita V. Malone (1992) conducted a dissertation research study in order to explore the connection between thinking style in relation to management style and organizational planning. The literature review supported the suggestion that inquiry modes have direct influence upon individual's planning and managerial styles. In the study, 583 law enforcement officers who held supervisory or management positions were each administered the InQ. The participants were

also requested to self-identify the management style of themselves and that of their chief executive officer.

Results from the study indicated that the participants primarily held the Idealist-Analyst thinking style. Important to note, however, is because of the propinquity of scores for each of the five primary styles identified by the InQ, the participants were more likely to be considered flat or level thinkers. Additional statistical analyses indicated that there were no or low correlations between management styles, area of academic emphasis, and level of education with that of thinking style preference.

***Yarbrough (1995)***

Sharon Roden Yarbrough (1995) noted that the way in which individuals think and perform has potential to affect the organizational environment and that the perceived organizational environment can influence the individual. One purpose of Yarbrough's work was to investigate the relationship between thinking styles and perceptions of group environment in an organizational context. This was done in attempt to gain knowledge regarding the factors that help make organizations effective.

A secondary purpose of the research was to determine if differences existed between the actual group environment and preferred group environment within an organizational context. Another purpose was to establish whether differences existed between dominant thinking styles and the subscales of preferred group environment in an organization.

Statistical analysis resulted in only 4% of correlational tests indicating a significant relationship between thinking style and organizational environment. It was concluded that thinking styles and actual and preferred organizational environments were not related. It was noted, however, that 59% of the respondents were determined to have a single dominant thinking style. Yarbrough noted that using knowledge of what does and what does not work can help to improve organizational environments.

### *K-12 Studies Using the InQ*

Within K-12 educational settings, one dissertation, and one scholarly research study have been conducted with use of the InQ. Jaaskelainen (1984) conducted dissertation work in order to determine if public school superintendents were apt to hire principals with characteristics similar to their own. Chao and Huang (2002) investigated the thinking styles of school teachers and university students in mathematics.

#### *Jaaskelainen (1984)*

Jacqueline Louise Jaaskelainen (1984) used the InQ, the *Edwards Personal Preference Schedule (EPPS),* and a self-designed demographic questionnaire in order to determine if superintendents hired principals with demographic characteristics, manifest needs, and thinking styles that were similar to their own. The study was confined to Michigan, and a total of 27 superintendents and principals participated.

The study compared thinking styles and the five manifest needs defined by the EPSS instrument: abasement, achievement, affiliation, autonomy, and

dominance. Testing with multiple ANOVAs at a .05 alpha level of significance, it was noted that no significant relationships existed. Using chi-square, Jaaskelainen sought to determine if significant relationships existed between demographic characteristics of the superintendents and the principals they hired. Conclusions from these tests indicated that significant relationships existed with regards to marital status, race, and educational level. There were no significant differences between age, years of classroom teaching, and administrative experience.

***Chao and Huang (2002)***

A study was conducted by Chao and Huang (2002) that focused on the thinking styles of a small number of school teachers and university students in mathematics. Participants in the study included 18 teachers and 15 students. A total of 21 were females and 12 males.

Results of data analysis indicated certain sex-based differences, as well as group-by-sex interactions with regards to preferred thinking style. The females scored as more Idealistic on the InQ than did the males. However, the female students and male teachers tended to prefer the Analyst thinking style. Overall, the most favored thinking style was the Analyst style. This corresponded to applicable literature on the InQ style characteristics as well as on information regarding thinking style and chosen occupation.

### *Higher Education Studies Using the InQ*

Based on an in-depth investigation, there have been four dissertations, one master's thesis, and one post-doctoral study conducted, based in the field of higher education, in which the researcher used the InQ survey instrument.

Dissertations include those of Patricia Ann Shank (1986), who investigated preferred thinking styles of leisure instructors. Jianhi Huang (1993) compared cognitive styles, cognitive profiles, and thinking styles among Chinese and North-American adult graduate students. Linda Maria Golian (1998) conducted a national study to determine thinking style differences among academic librarians. Most recently, Janice Borlandoe (2005) studied thinking styles of female college and university administrators.

#### *Shank (1986)*

Patricia Ann Shank (1986) studied the relationship between preferred leisure conceptualizations and preferred thinking styles among undergraduate college leisure instructors. Shank used the InQ survey instrument and a self-designed questionnaire in order to collect data concerning the instructors' leisure philosophies and curriculum developments.

For the primary study, a total of 122 instructors were selected, with 74 choosing to participate. This mixed method study included comparison and analysis of the InQ scores by determining absolute and relative frequencies using a .05 alpha level. Chi-square analysis was used to determine if a relationship existed between preferred leisure conceptualizations of leisure and thinking styles based on a .05 level of significance.

The qualitative component in Shank's study included interviews of leisure instructors who represented each of the five major thinking style categories as determined by the InQ. The interviews were conducted in order to determine whether there was a correlation between the stated leisure philosophies of the instructors and actual practices. Instructors representing each of the five major thinking style types were randomly selected to participate in follow-up case studies as well.

Results indicated that 57% of the sample group had thinking styles that fell into one of the five major categories, thus being termed 'one style thinkers.' Sixty percent of all of the 'one style thinkers' had a preference for the Idealist thinking style. The least preferred thinking style of the 'one style thinkers' was the Synthesist, with only 2%.

***Huang (1993)***

In her dissertation research, Huang (1993) studied the relationship of thinking styles, and cognitive profiles of Chinese and North American students in higher education. The population for the study included graduate students who were at least 25 years old, who were current students at the University of Wyoming. The participants included 96 males and 54 females.

A series of seven different research instruments were administered to the participants, including the *Category Width Scale, Groups Embedded Figure Test, Role Construct Repertoire Test,* and the InQ. All statistical analyses were performed using a .05 alpha level of significance, and analyses included means, standard deviations, frequency distributions, and Pearson's correlation test.

Positive correlations were noted between major of study and thinking style. This again corresponded to applicable literature on information regarding thinking style and chosen occupation. There was, however, no significant relationship found between sex and preferred thinking style.

***Golian (1998)***

Linda Marie Golian (1998) investigated whether differences in thinking style existed between senior level library administrators who worked in both public and technical service areas. The population for this national survey included senior level library administrators from all colleges and universities with an institutional membership in the Association of Research Libraries (ARL). The InQ and a demographic data form were distributed, and Golian reported an 80.3% return rate.

Data analysis was conducted using multiple ANOVAs in order to determine relationships between administrative role, gender, and thinking style preference. Initial results from the study indicated that there were no statistically significant differences between administrative role and sex to any of the five thinking styles identified by the InQ. Ancillary statistical analysis indicated that female library administrators were more likely to be Idealist thinkers, whereas males preferred the Pragmatist thinking style. In summarizing the findings, Golian noted that "a relationship between gender and thinking style exist; a relationship between area of administrative responsibility and thinking style exist; and a difference in preferred thinking styles among administrative peers in the same institutions was uncovered" (p. viii).

### *Borlandoe (2005)*

Janice Borlandoe (2005) conducted her dissertation research with current and former female college and university administrators in three mid-Atlantic states. The descriptive study incorporated quantitative and qualitative elements. The InQ was used to collect initial survey data, and Borlandoe continued the research with select focus group interviews.

The results of Borlandoe's work indicated that current and former female college and university administrators favor a variety of different thinking styles. There was a marked preference for Idealist and Analyst thinking styles in current and former presidents, vice presidents, and chief executives, however. Of the 34 women who fell into these categories, 12 (35.29%) were Idealist thinkers and 10 (29.41%) were Analyst thinkers. The focus group interviews resulted in findings that indicated significant differences in thinking style preference between female college and university presidents and department chairs or program coordinators.

## Review of Related Research on Female College and University Presidents

The last two decades have afforded the opportunity for a great deal of research to be conducted on female college and university presidents. Primarily, the research has focused on leadership, although other pertinent areas have been explored as well. As leadership is an outward process that relies heavily on internal thinking processes, some primary studies and implications will be discussed. Studies focusing on communication and management styles of female presidents will also be highlighted.

***Miller (1987)***

Judith G. Miller (1987) explored, in part, the leadership styles of women college presidents of two-year and four-year institutions (excluding women's colleges and religious-affiliated institutions). Miller also investigated the career paths and professional preparation of these presidents. The women were compared to their male counterparts regarding their leadership and organizational styles. The comparisons were based on the participating women and the male college presidents with whom they had closest working relationships.

Results indicated that the 55 participating females viewed their leadership styles as vastly different than their male counterparts. The women indicated a self-perception of greater emphasis on interaction with faculty, employee relations, and employee recognition over task accomplishment. The research identified patterns in career development and backgrounds of the female presidents. In addition, findings from the study indicated that differences in background, type of administrative experience, leadership, and communication style existed between these female presidents with regard to various institution types.

***Velivis (1990)***

Sister Annelle Velivis conducted dissertation research in 1990, in attempt to identify the leadership styles of 10 women college presidents. Velivis embraced a phenomenological approach to her qualitative study, and concluded that "Leadership style in these women presidents blended the 'ethic of care' and 'ethic of rights'" (p. 95). The expressed leadership style of the presidents in the

study “was expressed as being predominantly participatory” (p. 95). The findings of the study were indicative of “a new paradigm for leadership” (p. 94), and offer “cause to rethink the concept of leadership” (p. 94).

The findings by Velivis supported previous work by Jones (1986), who indicated that “Women administrators over 40 years of age tend to be more collaborative, emphasizing decentralized participative decision making” (p. 119). Jones further indicated: “Younger women reflect management styles that utilize more centralized decision-making and higher task orientation” (p. 119). As mentioned previously, thinking styles do influence the way we communicate, lead, and manage.

***Guill (1991)***

Julia Ann Guill (1991) identified conflict management style preferences of female community college presidents and then compared these preferences with a matched group of male community college presidents. Other variables that were examined in relation to the conflict management style preferences included president’s age, years of experience in the presidency, geographic location of the college, and the number of enrolled students at the respective colleges.

Participants responded to the Conflict Management Survey that was developed by Hall in 1986. Statistical assessment included the use of T-tests, MANOVAs, and univariate F-tests. Results from the data analysis indicated that there were no significant differences in style preference with regards to sex. There were, however, significant differences evidenced in the presidents’ style preferences based on years of presidential experience. When compared to the

original research conducted by Hall, there were significant differences in the results comparing females of each research study, but no significant differences were found in the males.

***Jablonski (1992)***

Margaret Ann Jablonski (1992) focused on identifying leadership styles and characteristics of seven female college presidents. Jablonski also investigated how respective faculties perceived the leadership style of their institution's president. The study was conducted by using a qualitative approach, interviewing both the president and at least five members from each respective institution.

The presidents generally perceived themselves as generative leaders. Jablonski noted that the generative leadership model assumed in the study included the themes of empowerment, collaboration, communication, decision-making, and feminism. The generative leadership model is based on the humanistic perspective of leadership, and has the core aspects of fostering productivity and creativity in others. These aspects are notably similar to the InQ Idealist thinking style.

Faculties at the institutions generally described the presidents in terms that one might typically associate with traditional male leadership models. Only two of the seven presidents were viewed as generative leaders by their colleagues. Based on Jablonski's work, the faculties' descriptions of the leadership styles of their respective presidents most closely resemble aspects noted in the InQ Analyst and Realist thinking styles.

***Brown (2000)***

Terri Moore Brown (2000) conducted dissertation research in attempt to develop a descriptive profile of female presidents of selected four-year independent colleges. Brown's study replicated research conducted by Buddemeier in 1998. Of interest to this study are Brown's findings concerning the president's age, years of employment as president, and area of educational background.

Brown found that nearly 60% of female presidents were between 50 and 59 years of age. Another 27% were over 60 years of age. Fifty percent of participants had been employed as president for 5 years or less, and another 30% had served as president for 6-10 years. Thirty percent of participants considered their major field of study to be Humanities/Fine Arts, with 27% with a major field of study in Education. Social science backgrounds were evidenced in 16.7% of the presidents, with the remainder with Religious, Legal, or other educational backgrounds. Doctorate degrees were held by 93.3% of those women who responded to Brown's study.

From the data collected in 1999 for the Brown study, the typical female president at independent colleges that are members of the American Council on Education is 56-years old, has earned a doctorate in Education or Humanities/Fine Arts, and has served as college president for 7 years (Brown, p. 76). The research conducted by Brown will be beneficial in making comparisons of the same personal demographic characteristics of the female presidents who participate in this study.

***Gatteau (2000)***

Gatteau sought to determine what factors influence women to seek college presidencies, what the leadership styles and values of women college presidents were, and what significance is attached to gender in the role of a college president. In addition, the influence of institutional status, type, and culture on female presidential leadership was examined, as well as inquiry into the commitments, accomplishments, challenges and rewards of women college presidents.

Female presidents at select 4-year institutions in the Eastern United States participated. The research entailed 1-hour interviews with these women, along with document analysis of resumes, speeches, and pertinent papers and publications of the participants. Among other things, Gatteau found that the presidents described their leadership styles as collaborative, focusing on open communication and building community.

***Gregory (2003)***

Christy Lea Gregory (2003) studied 85 female community college presidents in order to identify leadership and resiliency characteristics. A second purpose of the study was to determine whether relationships existed between perceived leadership characteristics of the female presidents as compared to their male counterparts. The final objective was to determine whether there were relationships between the subscales of the identified resiliency characteristics.

The researcher administered a self-designed instrument in order to address the research questions. Findings from the study were consistent with the literature

on females in educational administrative leadership positions. Participants considered themselves resilient, and claimed to exhibit initiative, morality, creativity, and humor, among other traits. Noted leadership strengths were cooperation, concern about personal relationships, and verbal orientation.

***Stout-Stewart (2004)***

Deriving from literature on transformational leadership, Sherry Stout-Stewart (2004) conducted research to determine the perceptions of female chief executive officers in community colleges regarding leadership practices and behaviors. The study served to investigate whether there were relationships between leadership patterns and behaviors with regards to experience and educational level of the chief executive officer, and campus setting, among others.

Participants included 126 female CEO's of institutions with membership in the American Association of Community Colleges. The Leadership Practices Inventory by Kouzes and Posner was administered, and results indicated that there were no significant differences between campus setting and leadership patterns. The results also indicated that leadership patterns differed among female community college presidents, based on educational level and experience. If leadership patterns differ based on certain personal and institutional demographic characteristics, it is speculated as to whether there will be differences in thinking styles as related to the same demographic distinction

**Review of Related Research on College and University Presidents**

Pertinent research related to leadership styles has been conducted with college and university presidents, not limited to a female population only.

Wheeler (1988) studied the leadership behaviors, attitudes, and demographic characteristics of male and female college presidents. In the case of Lockard (2000), sex-based differences were not tested for, but the findings did indicate that there are specific leadership styles that permeate the college and university presidential landscape.

***Wheeler (1988)***

Karen Jean Wheeler (1988) compared the leadership behaviors and attitudes of college presidents, when controlling for age, number of years of experience in higher education administration, and the total number of years as a college president. It was hypothesized that there would be significant differences between leadership behaviors and attitudes of college presidents when controlling for the mentioned variables. This research was made possible, in part, through a nationwide research project funded by the Exxon Education Foundation, which served to identify characteristics of effective college presidents.

Participants completed the Fisher/Tack Effective Leadership Inventory. Descriptive statistics were used to develop a profile of the participating college presidents. Tests were conducted to determine whether there were differences between male and female presidents. Results indicated that there were sex-based differences with regard to exhibited and perceived leadership behaviors.

***Lockard (2000)***

Lockard conducted research in order to determine whether there was a significant difference in leadership style and if there was a significant difference in the quality of leadership style between college presidents who were considered

to be outstanding and another selected group of college presidents. This study did *not* focus entirely on females, and sex-based differences were not tested for. Of significance to this current study was the large quantity of presidents who participated in this study, which allows for generalizability to a larger audience of college and university presidents.

The sample for the study was comprised of 147 presidents considered outstanding, and 147 other randomly selected presidents. Sixty outstanding presidents participated in the study, as did 58 randomly selected presidents, for an overall response rate of 41.2%. Gender distributions of both the selected sample and the respondents were each consistent with national distribution percentages of college and university presidents at the time the research was conducted.

Findings from the study indicated that although there was no statistically significant difference between the two groups of presidents on the tested measures, there was evidence of a predominant leadership style.

The prevalent style, task-oriented, was indicated in every demographic grouping, with length of service being the only category demonstrating difference in preferred style. Specific findings of the study indicated that 50% of the outstanding presidents were found to have the task-oriented leadership style, while 32% were relationship-oriented, and 18% indicated socio-independent leadership styles. Similarly, the randomly selected group of presidents included 45% with a task-oriented style, 29% with a relationship-oriented style, and the remaining 26% indicating preference for the socio-independent style. These

findings were consistent with Fiedler's historical research on leadership styles of school principals.

In relation to the noted characteristics to each of the InQ thinking styles, findings from this study would indicate that these college presidents lean predominantly toward the Realist thinking style, followed by the Idealist and Analytical styles, respectively. This is a general assumption, as there were no sex-based differences tested that were tested.

## Chapter Summary

Chapter II presented a comprehensive review of the research and literature associated with this study. Initially, the definitional dilemma with cognitive style, learning style, personality style, and thinking style was addressed and clarified. Next, a dialogue regarding the history and progression of contingency Leadership Theory and Thinking Style Theory was presented. Finally, an extensive review of pertinent thinking style research was presented.

# CHAPTER III

## RESEARCH METHODS

The purpose of this study was two-fold: to identify the thinking style preferences of female college and university presidents at selected private and public institutions, and to determine if differences in thinking style exist with regard to various institutional and personal demographic factors. This study was designed to examine whether differences in thinking style preference exist with regard to selected Carnegie classifications (Associate, Baccalaureate, Master's, Doctoral) and institutional control (federal, independent, independent-religious, local, private, proprietary, state, state and local, state-related). Additionally, personal demographic information of the female presidents was evaluated to determine whether certain characteristics indicated a statistically significant difference to the president's preferred thinking style. Demographic characteristics considered included the highest academic degree earned, primary area of academic background/specialty, president's age, and total years of employment as president.

Chapter III discusses the research design and methods of the study. The chapter begins by restating the research questions associated with this study and then discussing the research design. Information concerning selection and verification of the population is then offered. Presentation of the InQ follows, with information provided on the development and background of the instrument,

the components of the InQ, and a description of the five thinking styles as identified by the InQ. Focus is then given to a discussion of applicable reliability and validity studies. Finally, the scoring procedures for the InQ are fully explained.

The next section of the chapter highlights the procedures for the collection of data, beginning with measures that were incorporated in order to ensure participant confidentiality. Pre-survey preparation is then discussed, with a detailed description of the survey packet contents, information regarding post-mailing procedures, and discussion of methods utilized to increase participation. Information on data instrument scoring as pertaining to this study is then offered. Discussion of methods for data analysis is overviewed, followed by information relating to the proposed time schedule, and a summary of research methods.

## Restatement of Research Questions

The research questions associated with this study are:

1. What is the predominant thinking style preference(s) of female presidents at colleges and universities located within the United States?
2. Do differences in thinking style preference of female college and university presidents exist with regard to institutional Carnegie classifications?
3. Do differences in thinking style preference of female college and university presidents exist with regard to institutional control?
4. Do differences in thinking style preference of female college and university presidents exist with regard to highest academic degree earned?

5. Do differences in thinking style preference of female college and university presidents exist with regard to primary area of academic background/specialty?
6. Do differences in thinking style preference of female college and university presidents exist with regard to age?
7. Do differences in thinking style preference of female college and university presidents exist with regard to total years of college or university presidential experience?

## Research Design

In order to assess the research questions in the most comprehensive manner, this study was originated to incorporate a predominant causal-comparative design, with a descriptive aspect necessary to address the first research question. The research was executed by taking a between-subjects approach to the selected design. Cone and Foster (2002) described the process:

> In describing your design, the initial point to make clear is whether it is of the within- or between-subjects variety. If the variation needed for studying the relationships involved in your study is obtained from changes in the same subjects over time or across situations, you are using a within-subjects approach. If the variation comes from differences between subjects at a single point in time, you are using a between-subjects approach. (p. 120)

This study entailed discerning the thinking style differences of female college and university presidents, and determining if differences in thinking style

between these presidents exist in relation to institutional Carnegie classification, institutional control, and various personal demographic characteristics. The between-subjects approach, therefore, was the appropriate research approach for this study.

The descriptive sector of the design was integrated in order to address the first research question. Information is provided concerning possible distinctions of thinking styles between female college and university presidents, and in what demographic and other contexts these differences, if any, are evident.

Huitt (2003) defines a descriptive study as one "in which the researcher attempts to document what is actually occurring" (p. 1). Huitt goes further to mention that in a descriptive study "the researcher has no control over the phenomena of the study, but simply records what is observed or reported" (p. 1).

This research was non-experimental in nature, as random assignment to groups was not made. Johnson and Christensen (2004) documented that "in nonexperimental research, random assignment to groups is not possible, and there is no manipulation of an independent variable by the researcher" (p. 40). In addition, Kerlinger (1986) made this observation:

> Nonexperimental research is systematic empirical inquiry in which the scientist does not have direct control of independent variables because their manifestations have already occurred or because they are inherently not manipulable. Inferences about relations among variables are made, without direct intervention, from concomitant variation of independent and dependent variables. (p. 348)

The independent variables associated with this study were categorical and passive in nature. They were categorical in that each had two or more factors but there was no ordering to the factors. The independent variables were passive in that the research was non-experimental and there was no manipulation of the independent variables. The passive independent variables associated with this study were institutional Carnegie classification, institutional control, highest academic degree earned, primary area of academic background/specialty, age, and years of presidency. The manifest nature of the passive independent variables associated with this study suggested that these variables were inherently non-manipulative.

The causal-comparative element of the design was included in order to ascertain if statistical differences existed between the independent variables noted and the president's preferred thinking style. Johnson and Christensen (2004) note,

> Typically, in causal-comparative research, the researcher studies the relationship between one or more categorical independent variables and one or more quantitative dependent variables. Because the independent variable is categorical in causal-comparative research, the different groups' average scores on a dependent variable are compared to determine whether a relationship is present between the independent and dependent variables. (p. 40)

When giving further definition and explanation of the causal-comparative design, Johnson and Christensen (2004) made this additional observation:

> Despite the presence of the word *causal* included in the term *causal-comparative research,* keep in mind that causal-comparative research is a nonexperimental research method…Because of the lack of manipulation…it is difficult to make statements about cause and effect. (p. 41)

Gall, Gall, and Borg (2003) note that causal-comparative research designs "do not permit strong conclusions about cause-and-effect, but are useful for initial exploratory investigations or in situations where it is impossible to manipulate the independent variable" (p. 295). They also state that in causal-comparative research, the researcher seeks to "identify cause-and-effect relationships by forming groups of individuals in whom the independent variable is present or absent – or present at several levels – and then determining whether the groups differ on the dependent variable" (p. 296). They emphasize the use of causal-comparative designs in educational research by stating:

> Researchers sometimes prefer to use causal-comparative design for two reasons: forming groups to measure the independent variable often is more consistent with how practitioners and other education stakeholders think about the world; and the statistical results typically are easier to comprehend and interpret. (p. 296)

## Population

The population selected for this national study was all female college and university presidents at select public and private institutions of higher education located within the United States. The criterion for selection, other than the sex of

the president, was that the president's respective institution be classified by the Carnegie Foundation as Doctoral/Research – Extensive, Doctoral/Research – Intensive, Master's I, Master's II, Baccalaureate – Liberal Arts, Baccalaureate – General, Baccalaureate/Associate's, or Associate's.

This study, being comprehensive in nature and on a national scale, required the utilization of the entire population of female college and university presidents at public and private institutions within the United States, as opposed to a sample. As of November 2005, there were 595 female college and university presidents whose institutions are ranked as Associate's or higher by the Carnegie classification system. The specific number of female college and university presidents per institution classification are noted in Table 3.1.

**Table 3.1**

***Distribution of Female College and University Presidents per Carnegie Classification***

| | Quantity | Percent |
|---|---|---|
| Associate's | 328 | 55.13% |
| Baccalaureate/Associate's | 16 | 2.69% |
| Baccalaureate – General | 39 | 6.55% |
| Baccalaureate – Liberal Arts | 57 | 9.58% |
| Master's I | 92 | 15.46% |
| Master's II | 28 | 4.71% |
| Doctoral/Research – Extensive | 23 | 3.87% |
| Doctoral/Research – Intensive | 12 | 2.02% |

Sources: 2004 Peterson's Directory of College & University Administrators, and 2005 Higher Education Directory.

### *Verification of Population*

In order to accurately determine the correct members of the population for the study, reference was made to the 2004 Peterson's Directory of College & University Administrators and the 2005 Higher Education Directory. Both of these directories contained information regarding the name of each institution's president or chief executive officer, if this office was presently filled.

The majority of institutions of higher education located within the United States and Puerto Rico are included in each Directory. Entries were cross-referenced for accuracy. If dissimilarities were noted or if an institution was listed in only one of the directories, then confirmation concerning the president's identity was made by one or more of the following methods: (1) examining the institution's website, (2) telephoning an administrative representative of the institution, and/or (3) e-mailing an administrative representative of the institution.

Additionally, the directory listings included information denoting the institutions Carnegie classification, institutional control, mailing address, and telephone number. The 2004 Peterson's Directory listed information on campus setting of institutions, and for a majority of the institutions the president's personal e-mail addresses and office telephone numbers were provided. The 2005 Higher Education Directory provided the institution's website address and listed administrative officers with respective salutations. Because of the quantity of demographic and contextual information provided in the directories, the demographic questionnaire associated with this research will be succinct and a large quantity of independent variable information was entered into the research

database in advance of dissemination of the survey packets. Once surveys are returned, information provided on the demographic data form was referenced with the information presented in the 2005 Higher Education Directory and the 2004 Peterson's Directory.

## Instrumentation

This section entails an in-depth discussion of the survey instrument selected for use in this study. The Inquiry Mode Questionnaire (InQ) is a closed, forced-choice, self-reporting instrument that assists in determining an individual's preferred mode of thinking. Discussion describing the development and background of the instrument is offered, followed by a detailed description of the components of the InQ and the respective thinking styles associated with the questionnaire. Data on reliability and validity of the instrument are provided, as well as InQ scoring guidelines and interpretation information.

### *InQ Development and Background*

Allen F. Harrison and Robert M. Bramson developed the InQ in 1977. The instrument was revised in 1980, and then amended again in 1998, with assistance from Susan Bramson and Nicholas Parlette. The InQ is designed to assist in the identification of preferred modes for thinking, asking questions, making decisions, and solving problems (Harrison, Bramson, Bramson, & Parlette, 1997). This is accomplished by measuring behavioral actions in everyday life (Harrison & Bramson, 1982). The instrument is designed to measure thinking styles in five primary dimensions: (a) Analyst, (b) Idealist, (c) Pragmatist, (d) Realist, and (e) Synthesist. The techniques that an individual

utilizes to distinguish problems, utilize information, and choose alternatives to everyday actions depends, in part, upon the extent to which each style of thinking is executed by an individual.

### *Components of the InQ*

The InQ consists of 18 five-part questions (see Appendix A). For each question, a circumstance is described, with five hypothetical endings listed, each being representative of one of the five InQ thinking styles. Survey participants are to rank each of the five possible endings from most preferred (using a number 5) to least preferred (using a number 1). For each question, the participant uses the rankings of 1, 2, 3, 4, and 5 only one time. For accurate scoring, the participant must utilize all five rankings per each question. When tallied, the scores provide data for determining the preferred thinking style(s).

#### *InQ Thinking Styles*

According to information presented on the website of InQ Educational Materials, Inc., http://www.inq-hpa.com/about.htm, the five thinking styles represented by the InQ instrument can be generalized as follows:

- ANALYSTS see the world as structured, organized, and predictable. They believe there should be one best method for doing anything. Their style is prescriptive and method-oriented.
- IDEALISTS experience reality as the whole into which new data are assimilated, based on perceived similarities to things they already know. Their style is assimilative, receptive, and need-oriented.

- PRAGMATISTS perceive a world constantly changing and largely unpredictable, requiring a flexible "whatever works" approach to problem-solving. Their style is adaptive, incremental, and payoff-oriented.
- REALISTS are inductive. Their mental models are derived chiefly from observation and their own experience. Their style is empirical and task-oriented.
- SYNTHESISTS focus their thinking on ideas, and find connections among things that other people see as having little or no relationship. Their style is challenging, speculative, integrative, and process-oriented (InQ Educational Materials, 2003).

### *InQ Instrument Reliability*

The reliability of the subtest of the InQ was investigated by test-retest procedures, and was reported in the study by Bruvold et al., (1983). In the study, data were obtained from 63 total participants from three college classes in 1981 and 1982. The interval between testing was six weeks. The results from a correlational item analysis denoted that “85 of the 90 InQ items were correlated with their denoted subtest at significance levels exceeding the 0.001 level” (Bruvold et al., 1983, p. 489).

Eight of the 90 responses on the InQ that did not discriminate between the highest and lowest scorers at the .001 level of significance were identified by a Likert scale item analysis. The results of this second test indicated that 82 of the 90 response items discriminated between the highest and lowest scorers. The researchers then concluded that 81 of the 90 InQ items were principally adequate.

The researchers noted that the "subtest test-retest correlation coefficients were all positive and were all significant beyond the 0.001 level" (Bruvold et al., 1983, p. 491) and that "reliability coefficients were consistently larger in absolute value than intercorrelations obtained within one testing session between subtests" (p. 491).

These test-retest coefficients for the five sub-tests were chosen through the computation of Spearman Rank Difference Coefficients with a median coefficient of .75. As noted by Bruvold et al., the subtest test-re-test correlation coefficients were positive and found to be significant at an alpha level of .001. The test-retest coefficients for the five subtests of the InQ are represented in Table 3.2. The substantiated reliability results suggested general stability of the instrument.

**Table 3.2**

***Test-retest Reliability and Subtest Intercorrelation Coefficients***

| | A | I | P | R | S |
|---|---|---|---|---|---|
| Analyst (A) | (0.70) | -0.16 | -0.50 | -0.10 | -0.16 |
| Idealist (I) | -0.36 | (0.52) | -0.12 | -0.49 | -0.24 |
| Pragmatist (P) | -0.41 | -0.02 | (0.65) | -0.14 | -0.24 |
| Realist (R) | -0.18 | -0.43 | -0.03 | (0.61) | -0.43 |
| Synthesist (S) | -0.30 | -0.05 | -0.32 | -0.40 | (0.75) |

Source: Bruvold, W. H., Parlette, N., Bramson, R. M., & Bramson, S. J. (1983). An investigation of the item characteristics, reliability, and validity of the Inquiry Mode Questionnaire. *Education and Psychological Measurement, 43*, 483-493.

### *Validation of Instrument*

Validity of the InQ was initially established by the use of two methods. A subtest score profile analysis entailed the evaluation of profiles of disparate occupational groups. Factor analysis involved the evaluation of the constancy of profiles in support of the practice of profile interpretation (Bruvold et al., 1983). The structures of the 90 items that comprise the InQ Inventory were analyzed for the factorial.

To assess validity of the InQ, customary factor-analytic statistical procedures were utilized, followed by the quartimax rotation procedures designed to simplify rows for a factor matrix (Bruvold et al., 1983). In statistical factor analysis, clusters or groupings should develop for the required factors. Analysis of the InQ, for example, should have all 18 Analyst items with a major positive loading onto a single factor. The same concept is unvarying, for each of the five InQ thinking style dispositions.

Table 3.3 discloses the highest positive factor loadings of the InQ items. Table 3.4 reveals the summary of all positive factor loadings of the InQ items. When examining all positive factor loadings, these tables indicate that Factor 1 represents the Idealist factor. Factor 2 indicates a strong Analyst factor. Factor 3 represents the Realist factor. Factor 4 specifies a robust Synthesist factor. Factor 5 represents the Pragmatist factor.

When comparing all positive factor loadings to the highest positive factor loadings, the only notable difference is that Factor 1 equivalently denotes both Idealist and Pragmatist factors in the highest factor loadings. In addition, Loading

5 denotes a Pragmatist factor, but this factor is not as strong for the Pragmatist as that arising from Loading 1. Golian (1998) noted that it "has been statistically argued that this may be the result of the factor loading and rotation" (p. 131).

**Table 3.3**

***Highest Positive Factor Loadings of InQ Items***

| **Factors** | A | I | P | R | S |
|---|---|---|---|---|---|
| Loading 1 | 3 | (8) | (8) | 3 | 0 |
| Loading 2 | (9) | 1 | 0 | 5 | 2 |
| Loading 3 | 4 | 1 | 5 | (6) | 1 |
| Loading 4 | 1 | 6 | 0 | 0 | (13) |
| Loading 5 | 1 | 2 | 5 | 4 | 2 |

Source: Harrison, A. F., & Bramson, R. M. (1977). *InQ administration and interpretation manual.* Berkeley: Bramson, Parlette, Harrison and Associates.

**Table 3.4**

***All Positive Factor Loadings of InQ Items***

| **Factors** | A | I | P | R | S |
|---|---|---|---|---|---|
| Loading 1 | 13 | (13) | 10 | 8 | 1 |
| Loading 2 | (16) | 8 | 3 | 6 | 9 |
| Loading 3 | 14 | 3 | 11 | (12) | 2 |
| Loading 4 | 9 | 12 | 4 | 1 | (14) |
| Loading 5 | 6 | 11 | (12) | 10 | 9 |

Source: Harrison, A. F., & Bramson, R. M. (1977). *InQ administration and interpretation manual.* Berkeley: Bramson, Parlette, Harrison and Associates.

After the revision of the InQ in 1988, Kienholz, Hayes, Mishra, and Engels (1993) provided validation research. This investigation entailed the study of nurses to determine if they had a preferred thinking style. The researchers collected information from 216 registered nurses who volunteered to participate in the study. Results of this research indicated a single dominant style and two-way combined preferences for the five thinking styles.

According to the validation research conducted by Kienholz et al., "A single preferred style of thinking was identified by 98 (45.4%) of the subjects. Of these, 36 were Idealists, 8 were Pragmatists, 25 were Analysts, and 29 were Realists. In addition, five (2.32%) three-way thinkers were identified and 23 (10.65%) had level profiles" (p. 781). These results were consistent with those seen in the initial validation studies.

### *Instrument Scoring and Interpretation*

The InQ contains 18 questions, each with a 5-item ranking response. The questionnaire does not measure ability; therefore, there are no correct or incorrect responses. Each of the 18 questions is followed by five total responses. Participants rank these responses in order, from behavior they perceive to best represent themselves (using a 5) to behavior they perceive to be least representative of themselves (using a 1). The rankings of 1 to 5 can be used only one time per question. Responses for each question correspond to the five InQ thinking styles, and the instrument provides a self-scoring section in order to compute the score for each style.

The following is representative of a question on the InQ, and is the same example provided on the first page of the instrument (Appendix A):

WHEN I READ A REPORT, I AM MOST LIKELY TO PAY ATTENTION TO:

- The quality of the writing
- The main ideas in the report
- The table of contents
- The back-up materials and tables
- The findings and recommendations

On the InQ, scoring boxes are provided in order for the survey participant to record their ranked responses for each question. After completing the questionnaire, the responses are tallied, with assistance of a diagram on the instrument scoring section that allows the responses for each of the represented thinking styles to be computed with relative ease.

The tallying method yields a minimum score of 18 and a maximum score of 90 for each of the five thinking styles (Kienholz et al., 1993). Due to the design of the instrument, total summation of each of the five thinking style scores will result in a cumulative score of 270. This score is homogeneous. What does fluctuate with each survey respondent is the distribution of sub scores for each of the five identified thinking styles. This variability is what indicates the individual's level of preference for each of the five thinking styles.

InQ Educational Materials notes in *InQ: Your Thinking Profile. Manual of Administration and Interpretation* (1997) that the numeric scoring values of each of the five thinking styles are interpreted as follows:

- Scoring 72-90 in any one thinking style category signifies a dedication to this thinking style. An individual with such a score will use this style in most situations.
- Scoring 66-71 in any one thinking style category indicates a strong preference for that thinking style. An individual with such a score will make consistent use of this style unless they deem it inappropriate for the specific situation.
- Scoring 60-65 in any one thinking style category suggests a noticeable preference for that particular thinking style. An individual with such a score will probably make use of this style.
- Scoring 49-59 in any one thinking style category is interpreted as that individual having a uniform preference for that style, neither having an inclination or disinclination for the use of that style.
- A score of 43-48 in any one thinking style category signifies a moderate disinclination for that particular thinking style. An individual with such a score will have a tendency not to use this particular style.
- A score of 37-42 in any one thinking style category implies a marked disinclination for that particular thinking style. An individual with such a score will seldom make use of that style.
- A score of 18-36 in any one thinking style category connotes a practical disregard for that thinking style. An individual with such a score will seldom use this mode of thinking, even when it is appropriate for the particular situation.

In addition, scores within four points of each other indicates equivalent use of those two thinking styles, with interchanges between the two styles occurring on a frequent basis. Scores between 48 and 60 on a minimum of four styles is interpreted as an even preference or no preference.

## Collection of Data

This section describes the data collection methods. Discussion of procedures incorporated to assist in participant confidentiality is followed by pre-survey preparation procedures. Next, a detailed description of the survey packet contents is given. Subsequently, post-mailing procedures are described, with emphasis on data collection from the survey instruments. The final section discusses the methods utilized to increase participation in the study.

### *Confidentiality Procedures*

Ensuring confidentiality of information and data pertaining to the research participants was of significant concern. Determining the actions necessary to ensure confidentiality was accomplished by reviewing various dissertations and discussing the issue with professors knowledgeable and experienced on such matters. The following procedures were utilized in order to help provide participant confidentiality:

- Each participant was assigned a distinctive and confidential survey code number so that the name of the participant was not associated with any of the returned survey materials.
- Keeping a master list of the individuals that comprise the population for this study, and their respective distinctive and confidential survey code

numbers in a location at the primary researcher's residence that is not available to outside parties.

- All items contained in the survey packet were marked with the participant's distinctive survey code number. No such markings were used on the outside mailing envelope.
- Survey packets and all follow-up correspondence mailed to participants were stamped CONFIDENTIAL on the exterior of the mailing envelope.

### *Pre-Survey Preparation*

Initial preparation necessary in order to embark upon this research study involved numerous processes, including, in initial order of action, the following:

- Reviewing of the methods or methodology sections of previous dissertations concerning thinking styles, and all available dissertations in which the researcher utilized the InQ survey instrument.
- Establishing and maintaining close contact with professors at Marshall University Graduate College who have strong quantitative research skills, in order to help assure that the research was appropriately designed.
- Examining the 2004 Peterson's Directory of College & University Administrators and the 2005 Higher Education Directory in order to develop a list of current female college and university presidents at Associate's and higher Carnegie classified institutions of higher education within the United States.
- Verifying by telephone, electronic mail, or institution website, the correct identity and specific job title of institutional presidents whose information

was not duplicated in both 2004 Peterson's Directory and the 2005 Higher Education Directory.

- Verifying by telephone, electronic mail, or institution website, the sex of presidents whose first names to do clearly identify them as male/female, are comprised of initials only, and/or that cause the researcher to be uncertain as to sex identity.
- Developing an electronic database of the population for this study that was used throughout the study. The database includes information concerning the president's name, title, institutional information, institutional website, office mailing address, electronic mail address, and office and/or institution telephone numbers. This information was made available in the 2004 Peterson's Guide and/or 2005 Higher Education Directory.
    - Data regarding institutional Carnegie classification was presented in both the 2004 Peterson's Directory and the 2005 Higher Education Director and was entered into the database.
    - Data pertaining to institutional control and campus setting was noted for the majority of institutions in the 2004 Peterson's Directory and was also compiled into the database.
    - Personal demographic data of the president and her InQ score information will be entered into this same database upon survey completion. This database will serve as the catalyst for data compilation, pending appropriate coding and entry of data into the

Statistical Package for the Social Sciences (SPSS) statistical analysis software package.

- Verifying by telephone, electronic mail, or institution website the correct mailing information for members of the research population whose information was not cross-validated through the 2004 Peterson's Directory and 2005 Higher Education Directory.
- Obtaining permission from the doctoral dissertation committee to proceed with intent to conduct the specified research study.
- Obtaining permission from the Marshall University Institutional Review Board in order to commence dissertation research.
- Creating a cover letter requesting participation in the study (Appendix C), a consent form (Appendix D), and a Demographic Data Form (Appendix E).
- Reproducing the cover letter requesting participation in the study, consent form, and Demographic Data form in quantities sufficient for the initial mailing.
- Purchasing ample quantities of the both the InQ survey instrument and mailing supplies.
- Organizing, assembling and mailing the survey packets.
- Establishing an initial cut-off date for data collection

### *Survey Packet Contents*

The subsequent series of procedures necessary for this study involved preparation and mailing of the survey packets. A total of 595 survey packets will

be mailed to the female college and university presidents whose public or private institutions are located within the United States and are categorized as Associate's or higher by the Carnegie classification system. The following items were included in each survey packet:

- Cover letter requesting participation in the study, which will introduce the researcher, explain the rationale for the study, assure confidentiality of participation, and state the initial cut-off date for survey material return (Appendix C).
- Copy of the approved Marshall University's Institutional Review Board Application (Appendix F).
- Consent form (Appendix D).
- Demographic Data Form (Appendix E).
- Inquiry Mode Questionnaire (InQ) (Appendix A).
- Pre-addressed, postage-paid envelope for survey material return.

### *Post-Mailing Procedures*

After mailing the 595 survey packets, data gathering work ensued. The researcher performed the data gathering and compilation functions. The following sequence of events were completed in the post-mailing phase of the research study.

- Notation was made of information necessary for tracking returned survey materials.
- The returned InQ instruments were scored within one week of receipt.

- Scoring of the returned InQ survey instruments was cross-checked for accuracy.
- The thinking style scores and demographic data was entered into the dissertation database.
- Verification was made regarding the data entry of InQ scores and demographic data onto the database.
- Thank-you letters (Appendix G) were mailed to all study participants who self-disclosed their identity.
- With the thank-you note, the individual participant's InQ score grid (part of Appendix A) and an InQ interpretation sheet (also part of Appendix A) were mailed if the participants so request.
- With the thank-you note, InQ score grid and interpretation sheet (if requested), an executive summary (in form of the study abstract) of the research study was mailed to all research participants who so requested.

### *Methods to Increase Participation*

The following procedures were incorporated in order to increase the potential for survey participation:

- Ensuring through cross-verification of the 2004 Peterson's Directory and the 2005 Higher Education Directory and through investigation via telephone, electronic mail, and/or institutional website (if needed) that the correct name and title of the individual, along with correct mailing information, were obtained.

- Including a self-addressed, prepaid return mailing envelope for the return of survey information.
- Using a return address at the Marshall University Graduate College office of the researcher in order to add credibility to the request for participation.

## Analysis of Data

The self-administered InQ survey and demographic data questionnaire were used to collect the data for this study. The InQ surveys were scored for each participant as the questionnaires were received, and these scores entered into a computerized database. As well, responses provided on the demographic data form were coded and categorized, as appropriate, and entered into the same database. The InQ scores and demographic data were crosschecked for accuracy prior to commencing statistical analysis.

Descriptive statistical analysis, inclusive of frequency tables, measures of central tendency, and measures of variability were utilized in order to address the first research question, as this question did necessitate the use of comparative analysis or tests of significance. The remaining six research questions of this study were transformed into null hypotheses, as stated:

1. There is no statistically significant difference between thinking style preference of female college and university presidents in relation to institutional Carnegie classification.
2. There is no statistically significant difference between thinking style preference of female college and university presidents in relation to institutional control.

3. There is no statistically significant difference between thinking style preference of female college and university presidents in relation to highest academic degree earned.
4. There is no statistically significant difference between thinking style preference of female college and university presidents in relation to primary area of academic background/specialty.
5. There is no statistically significant difference between thinking style preference of female college and university presidents in relation to president's age.
6. There is no statistically significant difference between thinking style preference of female college and university presidents in relation to total years of presidential experience.

For the purposes of data analysis, each of these hypotheses was tested using Multivariate Analysis of Variance (MANOVA) techniques. This provided for all five of the InQ thinking styles, and the presidents' respective scores for each style, to be tested for statistically significant differences between each independent variable, because each independent variable had multiple factors. In addition to MANOVA testing, multiple univariate Analysis of Variance (ANOVA) tests were conducted for each of the five distinct InQ thinking styles separately, testing for differences between each independent variable with their respective multiple factors. The use of ANOVA testing subsequent to MANOVA testing allowed for explicit information to be obtained with respect to individual significances, if any, between factors of the independent variables and each

separate InQ thinking style construct. This breakdown is provided in great detail within Chapter IV.

It was assumed that the data would be normally distributed among the population. Parametric statistical tests are robust to deviations from the normal distribution, as long as samples are large. In the case of this study, with a population of 595, it was assumed with relative certainty that the use of parametric and/or non-parametric statistical analyses would provide practical information, and would be most appropriate for addressing the research hypotheses that resulted from the stated research questions.

## Time Schedule

The researcher was granted permission from the doctoral committee to proceed with the study during the dissertation proposal meeting held on March 7, 2006. Subsequent to approval from the dissertation committee, application was made to the Institutional Review Board (IRB) of Marshall University. This research study, being non-experimental in nature and posing minimal risk to study participants, qualified for expedited review by the IRB. During the time that the application to IRB was under review, assembly of the survey packets ensued. Application was made to the Marshall University IRB on March 14, 2006 and approval to proceed with the research study was granted by the IRB on March 24, 2006. Survey packet assembly continued through the month of April, and all packets were mailed on May 8, 2006.

Approximately two weeks following the initial mailing, a follow-up/reminder e-mail was sent to those individuals who have not yet returned the

survey information. No potential participants requested a second mailing of a survey packet, and because of the high survey response attained during the first mailing (discussed in Chapter IV), no additional survey packets were mailed. It was initially planned that two weeks after the second mailing, follow-up/reminder post-cards as well as follow-up/reminder e-mails would be sent to those identified members of the population who have not returned the survey information. Again, because of the response rate, this step was deemed unnecessary.

The initial cut-off date for return of survey information was July 8, 2006, or approximately 2 months after the initial mailing. The quantity of surveys deemed appropriate and adequate for the study was attained before this initial cut-off date, therefore no additional discussion regarding the matter needed to take place between the researcher and the dissertation committee.

## Chapter Summary

This chapter has provided information regarding the research methods incorporated for this study. The research questions were presented, along with a comprehensive description of the research design, population, instrumentation, data collection procedures, data analysis procedures, general null hypotheses, and time schedule. A discussion of research participation, demographic characteristics of participants, dependent variable findings, research findings of the first research question and null hypotheses, as well as ancillary findings will be discussed in Chapter IV.

# CHAPTER IV

## PRESENTATION OF FINDINGS

The purpose of this study was to identify the thinking style preferences of female college and university presidents at selected private and public institutions, and to determine if differences in thinking style exist with regard to various institutional and personal demographics. This study was designed to examine whether differences in thinking style preference exist with regard to selected Carnegie classifications (Associate, Baccalaureate, Master's, Doctoral) and institutional control (federal, independent, independent-religious, local, private, proprietary, state, state and local, state-related). Additionally, personal demographic information of the female presidents was evaluated to determine whether certain characteristics had a statistically significant difference to the president's preferred thinking style. Demographic characteristics considered included highest academic degree earned, primary of academic background/specialty, age, and total years of employment as president. This study served to expand the knowledge base about the stylistic variables that characterize female college and university presidents, and to supply additional information to expand the knowledge base of thinking style research.

This study, being descriptive in nature, was designed to answer the following seven specific questions:

1. What is the predominant thinking style preference(s) of female presidents at colleges and universities located within the United States?
2. Do differences in thinking style preference of female college and university presidents exist with regard to institutional Carnegie classification?
3. Do differences in thinking style preference of female college and university presidents exist with regard to institutional control?
4. Do differences in thinking style preference of female college and university presidents exist with regard to highest academic degree earned?
5. Do differences in thinking style preference of female college and university presidents exist with regard to primary area of academic background/specialty?
6. Do differences in thinking style preference of female college and university presidents exist with regard to age?
7. Do differences in thinking style preference of female college and university presidents exist with regard to total years of college or university presidential experience?

This causal-comparative study was conducted utilizing quantitative survey methods. A copyrighted self-administered thinking style assessment survey by InQ Educational Materials, Inc. and a demographic questionnaire that was designed by the researcher were used to collect the data.

The information presented in Chapter IV details the results of all statistical data analyses associated with this study. The chapter is organized into five primary sections. These sections are (a) survey response, (b) demographic sample

characteristics, (c) research findings, and (d) chapter summary. Tables are provided immediately after each applicable narrative discussion.

## Survey Response

Chapter III detailed how the 595 female college and university presidents were identified and then invited to participate in the study. Of the total 595 surveys administered in the initial mailing, a total of 369 responses (62.02%) were received. Of these, 41 (11.11% of total responses) denoted that participation was not possible, only partial survey materials were returned, or the InQ survey was incorrectly filled out. This resulted in 328 usable surveys, representing 55.13% of the surveyed population.

Numerous rationales were offered for non-participation by 33 responding presidents, their representative, or other officials who provided information. The reasons for non-participation included: (a) a general inability to participate, (b) replies from institutions that the president no longer worked there, (c) notification from some institutions that the President had retired, (d) notification from the United States Postal Service that survey packets were undeliverable, (e) notification that Presidents were traveling abroad, (f) notification of Presidents being on general leave, (g) notification that a President was now a university system Vice President, and (h) clarification that one President was not a female.

Five returned surveys were unusable because the InQ was filled out incorrectly. Another three participants submitted unusable surveys because the demographic data form was not returned with the InQ survey. Table 4.1 provides a breakdown of the overall response activity.

**Table 4.1**

***Overall Response Activity of Female College and University Presidents***

| | Total Applicable Institutions | Responses | Percent | Usable Responses | Percent |
|---|---|---|---|---|---|
| Associate's | 328 | 212 | 64.64% | 190 | 57.93% |
| Baccalaureate | 112 | 62 | 55.36% | 54 | 48.21% |
| Master's | 120 | 75 | 62.50% | 68 | 56.67% |
| Doctoral | 35 | 20 | 57.14% | 16 | 45.71% |
| | | | | Total: | 328 |

## Participant Demographics

This section of Chapter IV details the demographic information of the study's' participants. The personal and institutional demographic characteristics associated with this study included: (a) Carnegie classification, (b) institutional control, (c) highest academic degree earned, (d) primary area of academic background/specialty, (e) age, and (f) years of presidential experience. Information regarding each of these demographic areas is presented in Tables 4.2 through 4.7, respectively.

### *Carnegie Classification*

The first institutional demographic area to be detailed is that of Carnegie classification. Participants in this study represented all eight of the institutional classifications as defined by Carnegie (Associate, Baccalaureate/Associate's, Baccalaureate-General, Baccalaureate-Liberal Arts, Master's I, Master's II, Doctoral-Extensive, Doctoral-Intensive). However, because of the similarities between major Carnegie groupings, the Carnegie classifications were grouped

into four primary areas: Associate, Baccalaureate, Master's, and Doctoral. Grouping institutions into these broader categories ensured adequate sample or cell sizes for data analysis purposes, helping to reduce or eliminate the possibility of statistical testing error.

While the largest concentration of participants are in Associate institutions, it is notable to review Table 4.1, which indicates that both the initial response rate and usable response rate for all four of the major classification groupings were sizeable, based on the total overall percentage of female presidents at such institutions.

**Table 4.2**

***Institutional Demographic Characteristics of Participants: Carnegie Classification***

| Classification | Frequency | Percent |
|---|---|---|
| Associate | 190 | 57.93% |
| Baccalaureate | 54 | 16.46% |
| Master's | 68 | 20.73% |
| Doctoral | 16 | 4.88% |

### *Institutional Control*

The next section of demographic information to be discussed is that of institutional control. As illustrated in Table 4.3, participants in this study represented all nine institutional control categories (federal, independent non-profit, independent-religious, local, private, proprietary, state, state/local, state related). The largest concentration of participating presidents were from state-

controlled institutions, followed by state/local controlled colleges and universities. Independent institutions were well represented as well, accounting for 23.8% of the represented institutions in this study. A total of 40 presidents from independent non-profit institutions participated, as did 38 presidents from independent religious-affiliated institutions. The smallest represented institutional control category was federal, although the represented percentage is consistent with the overall percentage of these institutions that exist in the United States.

**Table 4.3**

***Institutional Demographic Characteristics of Participants: Institutional Control***

| Control Structure | Frequency | Percent |
|---|---|---|
| Federal | 2 | 0.6% |
| Independent Non-Profit | 40 | 12.2% |
| Independent-Religious | 38 | 11.6% |
| Local | 16 | 4.9% |
| Private | 18 | 5.5% |
| Proprietary | 14 | 4.3% |
| State | 130 | 39.6% |
| State/Local | 62 | 18.9% |
| State related | 8 | 2.4% |

### *Highest Academic Degree Earned*

As typified in Table 4.4, the vast majority (87.8%) of female college and university presidents who participated in this study hold doctoral or professional degrees. Six of the participants are completing doctoral degrees, with only the

dissertation remaining. These participants all hold Master's degrees, with one holding an Education Specialist (Ed.S.) degree as well. Because of the near completion of the doctorate, the ABD designation was utilized for data analysis purposes in order to help further delineate the thinking profile of these women. All but two of the participants hold Master's degrees or higher. These two women are presidents at Associate level colleges. All participating presidents representing Master's and Doctoral level institutions held doctoral degrees.

**Table 4.4**

***Personal Demographic Characteristics of Participants: Highest Academic Degree Earned***

| Degree | Frequency | Percent |
|---|---|---|
| Doctorate | 278 | 84.8% |
| Juris Doctorate | 8 | 2.4% |
| Doctor of Medicine | 2 | 0.6% |
| ABD (holding Master's) | 6 | 1.8% |
| Master's | 32 | 9.8% |
| Baccalaureate | 2 | 0.6% |

### *Primary Area of Academic Background/Specialty*

The next topic to be illustrated is the primary area of academic background/specialty of the study's participants. On the demographic data form, respondents were asked to select their *primary* academic area. Some respondents selected more than one area, noting which area was their major per each degree they had sought. Although the quantity of such responses was small, when this

situation did occur, the academic area associated with their highest academic degree was used for data analysis in this study. Overwhelming specialization was seen in the area of Education. Sixteen percent of the participating female presidents have primary backgrounds in Humanities, with an equal percentage of participants focusing in Business and Social Sciences. Table 4.5 provides detailed information on all respondents self-identified primary area of academic background/specialty.

**Table 4.5**

***Personal Demographic Characteristics of Participants: Primary Area of Academic Background/Specialty***

| Area of Background/Specialty | Frequency | Percent |
|---|---|---|
| Arts | 10 | 3.0% |
| Business | 34 | 10.4% |
| Education | 134 | 40.9% |
| Health Sciences | 32 | 9.8% |
| Humanities | 54 | 16.5% |
| Law | 8 | 2.4% |
| Library Science | 2 | 0.6% |
| Math & Physical Sciences | 14 | 4.3% |
| Natural/Biological Sciences | 4 | 1.2% |
| Theology | 2 | 0.6% |
| Social Sciences | 34 | 10.4% |

### *Age*

Table 4.6 highlights the distribution of age among the presidents who participated in this study. There were seven age categories represented, with more than one-third of participants falling within the 55-59 years-of-age bracket. The greatest concentration of presidents is found in the age brackets encompassing the 55-64 years of age groups, corresponding to 61.5% of all participants in this research study. The youngest participant in the study was 42 years of age, with the greatest age being 74 years. The mean age of participants was 58.60 years, with a standard deviation of 5.74 years.

The mean age of participants at Associate institutions was 57.2 years. At Baccalaureate institutions, the mean age is only slightly higher at 58.6 years. The highest mean age was found at Master's level institutions, where participating female presidents have a mean age of 62 years. The mean age of participants at Doctoral institutions was 60.6 years.

**Table 4.6**

***Personal Demographic Characteristics of Study Participants: Age***

| Age Category | Frequency | Percent |
|---|---|---|
| 40-44 years | 6 | 1.83% |
| 45-49 years | 10 | 3.05% |
| 50-54 years | 62 | 18.90% |
| 55-59 years | 110 | 33.54% |
| 60-64 years | 92 | 28.05% |
| 65-69 years | 40 | 12.20% |
| 70 plus years | 8 | 2.44% |

### *Years of Presidential Experience*

The final demographic area of emphasis is that of total years of presidential experience, which ranged from 1 to 38 years, with a mean of 9.27 years for this study's participants. Classifications were established for ease in statistical analysis, rather than attempting to use each year interval. Slightly more than one-third of the participants have held this chief position for a total of 1-5 years, with 32.9% of the participants having been employed as president at any number of college or universities for 6-10 years. Participants were instructed to count partial years as one year, and to account for total years of college or university presidency, regardless of the number of institutions at which they held this role. Table 4.7 provides greater detail.

**Table 4.7**

***Personal Demographic Characteristics of Study Participants: Years of Presidential Experience***

| Years as President | Frequency | Percent |
|---|---|---|
| 1-5 years | 112 | 34.1% |
| 6-10 years | 108 | 32.9% |
| 11-15 years | 62 | 18.9% |
| 16-20 years | 32 | 9.8% |
| 20 plus years | 14 | 4.3% |

## Research Findings

The research findings section of this chapter first addresses question one, describing the thinking style preferences of female college and university

presidents. Next, a report of the InQ scores is provided, with regard to mean scores and ranges for each of the thinking styles. The first research question associated with this study is general in nature, and serves to lay the foundation for the development of a thinking style profile of female college and university presidents. No comparisons are made, and there was no intent to determine if statistically significant differences exist between independent variables. Descriptive statistics allowed for complete information to be provided that addressed this initial question.

To address research questions two through seven, Multivariate Analysis of Variance (MANOVA) testing was conducted. This test was selected because of the multitude of factors associated with both the dependent variable of thinking style, as well as all of the independent variables. MANOVA testing provided for all five of the InQ thinking styles, and the presidents' respective scores for each style, to be tested for significant statistical differences between each of the independent variables with all associated factors. As mentioned in Chapter III, MANOVA testing is a more advanced statistical test, and helps to reduce or eliminate the possibility of encountering Type I errors.

After conducting MANOVA testing and answering each of the research questions, multiple univariate ANOVAs were then conducted in order to provide (a) validation and support for MANOVA results, and (b) explicit and detailed information regarding significance between each distinct thinking style and every separate independent variable with its respective multiple factors. The use of ANOVA testing subsequent to MANOVA testing allowed for explicit information

to be obtained with respect to individual significances, if any, between factors of the independent variable and each InQ thinking style construct.

Analysis of the MANOVA results indicated statistically significant differences greater than the $p<.05$ level between thinking style and all of the independent variables, with the exception of the highest academic degree earned by the participating president. Subsequent ANOVA testing yielded statistically significant results greater than the $p<.05$ level for 22 of the 30 total null hypotheses that were derived from taking each of the five InQ thinking styles and applying them separately to research questions two through seven.

Specific to ANOVA testing, the independent variables of age and total years of presidential experience were significant for all five of the InQ thinking styles. Carnegie classification yielded significance to the Pragmatist and Realist thinking styles. Institutional control yielded significance to the Synthesist and Realist thinking styles. Primary area of academic background/specialty was significant for the Idealist, Pragmatist, and Analyst thinking styles. Highest academic degree earned by the president was significant for Synthesist, Idealist and Pragmatist Styles, even though the MANOVA test did not indicate significant difference for thinking style collectively.

Following, each of the primary research questions two through seven is stated, along with the corresponding null hypotheses. MANOVA test results are presented and discussed. Tailing each MANOVA table, each null hypothesis for primary research questions two through seven is addressed separately for each thinking style, with discussion of corresponding univariate ANOVA test results.

### *Research Question 1*

The first research question associated with this study asked, *What is the predominant thinking style preference of female presidents at colleges and universities located within the United States?* This question was addressed by the use of descriptive statistics.

In determining the predominant thinking style preference(s), the choice was made to select the InQ thinking style(s) for which the participants had the single highest score. Some participants had scores that were equivalent in two of the InQ thinking style categories, indicating a primary dual thinking style predominance. The dual thinking styles for which these 15 participants held the single highest scores were (a) Idealist-Analyst (five participants), (b) Idealist-Pragmatist (five participants), (c) Analyst-Realist (two participants), (d) Idealist-Realist (two participants), and (e) Pragmatist-Analyst (one participant).

There were nine participants who had a single highest score less than 60, indicating that the individual had no preference for any particular InQ thinking style. This specifies a neutral preference for all thinking styles and such an individual is said to have a flat thinking profile. Of these nine participants, five scored in the neutral range (49 to 59 points) for each of the five InQ thinking styles. The remaining four scored in the neutral range in four of the InQ thinking styles and in the disinclination range (37 to 48) for the other thinking style.

The most preferred thinking styles seen in this study, based on single highest score, were Idealist and Analyst, respectively. More than 75% of participating presidents' single highest scores fell within one of these two

thinking style categories. The least preferred thinking style was that of the Synthesist. Only three of the 328 presidents, less than 1% of the total participating group, had a highest thinking style score that fell in this category. Table 4.8 provides additional detail on thinking style preferences for single highest InQ scores.

**Table 4.8**

***Thinking Style Preferences, For Single Highest Scores, Among Female College and University Presidents***

| | Frequency | Percent |
|---|---|---|
| Analyst (A) | 109 | 33.23% |
| Idealist (I) | 143 | 43.60% |
| Pragmatist (P) | 29 | 8.84% |
| Realist (R) | 20 | 6.10% |
| Synthesist (S) | 3 | 0.91% |
| No Preference | 9 | 2.74% |
| Dual Preference | 15 | 4.57% |

Table 4.9 reports the strength ranges of InQ thinking styles by single highest scores. Among the group of 328 respondents, 80 (24.39%) had a score of 72 or higher, indicating dominance toward one particular style of thinking. Of these 80 women with a dominant approach to thinking, 41 (12.5%) had a preference for the Analyst style, 37 (11.28%) had a preference for the Idealist style, and two (0.61%) of the women scored dominant in both the Analyst and Idealist styles, indicating they were dual-style dominant. There were 108 respondents (32.93%) who had a score of 66 to 71, indicating a strong preference

for one of the individual thinking styles or dual thinking style preferences. There were nine participants whose single highest score fell below 60 points, indicating a flat thinking profile, as preference was not shown for any particular thinking style.

**Table 4.9**

***InQ Thinking Style Strength Ranges for Single Highest Scores***

| Score Range | Analyst | Idealist | Pragmatist | Realist | Synthesist | Dual | **N** | Percent |
|---|---|---|---|---|---|---|---|---|
| Dominant | 41 | 37 | 0 | 0 | 0 | 2 | **80** | 24.39% |
| Strong | 24 | 68 | 9 | 6 | 0 | 1 | **108** | 32.93% |
| Moderate | 44 | 38 | 20 | 14 | 3 | 12 | **131** | 39.94% |
| Neutral | -- | -- | -- | -- | -- | -- | **9** | 2.74% |
| Total | 109 | 143 | 29 | 20 | 3 | 15 | 328 | 100% |

There were 75 participants (22.87%) whose second highest score fell within four points of the high score area(s). According to *InQ Your Thinking Profile: Manual of Administration and Interpretation* (1997), such a person uses both thinking styles equally and interchanges them frequently. It is among the chief purposes of this study, however, to determine only the primary preference for thinking style, and this was accomplished by the use of single highest scores.

Table 4.10 provides the mean scores and other descriptive information for each of the thinking styles for the entire survey group. The Idealist and Analyst thinking styles, with means scores of 61.0488 and 58.5793, respectively, are more preferred than the other thinking styles. The Synthesist thinking style is the least preferred among these female college and university presidents. The data indicate

a neutral preference for use of the Pragmatist, Realist, and Synthesist styles among female college and university presidents.

**Table 4.10**

***Thinking Style Scores of Female College and University Presidents***

| Thinking Style | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|
| Analyst | 34 | 90 | 58.5793 | 10.46853 |
| Idealist | 28 | 90 | 61.0488 | 10.33021 |
| Pragmatist | 30 | 70 | 51.7988 | 7.51852 |
| Realist | 19 | 75 | 50.3902 | 8.15186 |
| Synthesist | 30 | 67 | 48.0976 | 7.11566 |

### *Research Question 2*

Research question 2 asked, *Do differences in thinking style preference of female college and university presidents exist with regard to institutional Carnegie classification?* This question was first addressed by MANOVA testing of the corresponding null hypothesis, followed by univariate ANOVA testing of each individual InQ thinking style conceptualization.

***Hypothesis 2.*** *There is no statistically significant difference between thinking style preference of female college and university presidents in relation to institutional Carnegie classification.* Based on the results of MANOVA testing, using an alpha level of .05, there was a statistically significant difference between thinking style preference of female college and university presidents in relation to institutional Carnegie classification. This finding was consistent for all four

MANOVA testing methods. Although each test resulted in a different p finding, each outcome was statistically significant on its own merit. This null hypothesis was rejected. A summary of the results of this MANOVA is presented in Table 4.11.

**Table 4.11**

***Multivariate Analysis of Variance of Thinking Style Preference and Carnegie Classification***

| Effect | Value | F | Hypothesis df | Error df | p |
|---|---|---|---|---|---|
| INTERCEPT | | | | | |
| Pillai's Trace | 1.000 | 696669.63 [a] | 5.000 | 316.000 | .000 |
| Wilks' Lambda | .000 | 696669.63 [a] | 5.000 | 316.000 | .000 |
| Hotelling's Trace | 11023.254 | 696669.63 [a] | 5.000 | 316.000 | .000 |
| Roy's Largest Root | 11023.254 | 696669.63 [a] | 5.000 | 316.000 | .000 |
| CARNEGIE | | | | | |
| Pillai's Trace | .166 | 1.568 | 35.000 | 1600.000 | .019 * |
| Wilks' Lambda | .842 | 1.587 | 35.000 | 1331.722 | .017 * |
| Hotelling's Trace | .178 | 1.603 | 35.000 | 1572.000 | .015 * |
| Roy's Largest Root | .108 | 4.956[b] | 7.000 | 320.000 | .000 * |

a. Exact statistic
b. The statistic is an upper bound on F that yields a lower bound on the significance level.
* denotes significance greater than p<.05

This same research question was applied in a null hypothesis format for each of the five InQ thinking styles. Following are restatements of each corresponding null hypothesis associated with each of the thinking styles, along with a statement of findings. A summarization of the results for these ANOVAs is presented in Table 4.12.

***Hypothesis 2 – Analyst.*** *There is no statistically significant difference between Analyst thinking style preference of female college and university presidents in relation to Carnegie classification.* Based on the results of univariate ANOVA testing, using an alpha level of .05, there was no statistically significant difference between Analyst thinking style preference of female college and university presidents in relation to institutional Carnegie classification, F (7, 320) = 1.552, p = .149. This null hypothesis was not rejected. A summary of results is presented in Table 4.12.

***Hypothesis 2 – Idealist.*** *There is no statistically significant difference between Idealist thinking style preference of female college and university presidents in relation to Carnegie classification.* Based on the results of univariate ANOVA testing, using an alpha level of .05, there was no statistically significant difference between Idealist thinking style preference of female college and university presidents in relation to institutional Carnegie classification, F (7, 320) = 1.253, p = .273. This null hypothesis was not rejected. A summary of results is presented in Table 4.12.

***Hypothesis 2 – Pragmatist.*** *There is no statistically significant difference between Pragmatist thinking style preference of female college and university presidents in relation to Carnegie classification.* Based on the results of univariate ANOVA testing, using an alpha level of .05, there was a statistically significant difference between Pragmatist thinking style preference of female

college and university presidents in relation to institutional Carnegie classification, F (7, 320) = 3.072, p = .004. This null hypothesis was rejected. A summary of results is presented in Table 4.12.

***Hypothesis 2 – Realist.*** *There is no statistically significant difference between Realist thinking style preference of female college and university presidents in relation to Carnegie classification.* Based on the results of univariate ANOVA testing, using an alpha level of .05, there was a statistically significant difference between Realist thinking style preference of female college and university presidents in relation to institutional Carnegie classification, F (7, 320) = 3.128, p = .003. This null hypothesis was rejected. A summary of results is presented in Table 4.12.

***Hypothesis 2 – Synthesist.*** *There is no statistically significant difference between Synthesist thinking style preference of female college and university presidents in relation to Carnegie classification.* Based on the results of univariate ANOVA testing, using an alpha level of .05, there was no statistically significant difference between Synthesist thinking style preference of female college and university presidents in relation to institutional Carnegie classification, F (7, 320) = 1.984, p = .057. This null hypothesis was not rejected. A summary of results is presented in Table 4.12.

**Table 4.12**

***Univariate Analysis of Variance of Individual Thinking Style Preferences and Carnegie Classification***

| | Type III SS | df | MS | F | p |
|---|---|---|---|---|---|
| ANALYST | | | | | |
| Between | 1176.732 | 7 | 168.105 | 1.552 | .149 |
| Within | 34659.207 | 320 | 108.310 | | |
| Total | 35835.939 | 327 | | | |
| IDEALIST | | | | | |
| Between | 930.936 | 7 | 132.991 | 1.253 | .273 |
| Within | 33964.284 | 320 | 106.138 | | |
| Total | 34895.220 | 327 | | | |
| PRAGMATIST | | | | | |
| Between | 1163.961 | 7 | 166.280 | 3.072 | .004 * |
| Within | 17320.759 | 320 | 54.127 | | |
| Total | 18484.720 | 327 | | | |
| REALIST | | | | | |
| Between | 1391.637 | 7 | 198.805 | 3.128 | .003 * |
| Within | 20338.412 | 320 | 63.558 | | |
| Total | 21730.049 | 327 | | | |
| SYNTHESIST | | | | | |
| Between | 688.809 | 7 | 98.401 | 1.984 | .057 |
| Within | 15868.069 | 320 | 49.588 | | |
| Total | 16556.878 | 327 | | | |

* denotes significance greater than p<.05

### *Research Question 3*

Research question 3 asked, *Do differences in thinking style preference of female college and university presidents exist with regard to institutional control?* This question was first addressed by MANOVA testing of the corresponding null hypothesis, followed by univariate ANOVA testing of each individual InQ thinking style conceptualization.

***Hypothesis 3.*** *There is no statistically significant difference between thinking style preference of female college and university presidents in relation to institutional control*. Based on the results of MANOVA testing, using an alpha level of .05, there was a statistically significant difference between thinking style preference of female college and university presidents in relation to institutional control. This finding was consistent for all four MANOVA testing methods. The results of each of these tests indicated a significance level of p.002. This null hypothesis was rejected. A summarization of the results of this MANOVA is presented in Table 4.13.

**Table 4.13**

***Multivariate Analysis of Thinking Style Preference and Institutional Control***

| Effect | Value | F | Hypothesis df | Error df | p |
|---|---|---|---|---|---|
| INTERCEPT | | | | | |
| Pillai's Trace | 1.000 | 522100.33 [a] | 5.000 | 315.000 | .000 |
| Wilks' Lambda | .000 | 522100.33 [a] | 5.000 | 315.000 | .000 |
| Hotelling's Trace | 8287.307 | 522100.33 [a] | 5.000 | 315.000 | .000 |
| Roy's Largest Root | 8287.307 | 522100.33 [a] | 5.000 | 315.000 | .000 |
| CARNEGIE | | | | | |
| Pillai's Trace | .216 | 1.799 | 40.000 | 1595.000 | .002 * |
| Wilks' Lambda | .801 | 1.798 | 40.000 | 1375.848 | .002 * |
| Hotelling's Trace | .229 | 1.792 | 40.000 | 1567.000 | .002 * |
| Roy's Largest Root | .080 | 3.182[b] | 8.000 | 319.000 | .002 * |

a. Exact statistic
b. The statistic is an upper bound on F that yields a lower bound on the significance level.
* denotes significance greater than p<.05

This same research question was applied in a null hypothesis format for each of the five InQ thinking styles. Following are restatements of each corresponding null hypothesis associated with each of the thinking styles, along with a statement of findings. A summarization of the results for these ANOVAs is presented in Table 4.14.

***Hypothesis 3 – Analyst.*** *There is no statistically significant difference between Analyst thinking style preference of female college and university presidents in relation to institutional control.* Based on the results of univariate ANOVA testing, using an alpha level of .05, there was no statistically significant

difference between Analyst thinking style preference of female college and university presidents in relation to institutional control, F (8, 319) = .892, p = .523. This null hypothesis was not rejected. A summary of results is presented in Table 4.14.

***Hypothesis 3 – Idealist.*** *There is no statistically significant difference between Idealist thinking style preference of female college and university presidents in relation to institutional control.* Based on the results of univariate ANOVA testing, using an alpha level of .05, there was no statistically significant difference between Idealist thinking style preference of female college and university presidents in relation to institutional control, F (8, 319) = 1.351, p = .217. This null hypothesis was not rejected. A summary of results is presented in Table 4.14.

***Hypothesis 3 – Pragmatist.*** *There is no statistically significant difference between Pragmatist thinking style preference of female college and university presidents in relation to institutional control.* Based on the results of univariate ANOVA testing, using an alpha level of .05, there was no statistically significant difference between Pragmatist thinking style preference of female college and university presidents in relation to institutional control, F (8, 319) = 1.315, p = .235. This null hypothesis was not rejected. A summary of results is presented in Table 4.14.

***Hypothesis 3 – Realist:*** *There is no statistically significant difference between Realist thinking style preference of female college and university presidents in relation to institutional control.* Based on the results of univariate ANOVA testing, using an alpha level of .05, there was a statistically significant difference between Realist thinking style preference of female college and university presidents in relation to institutional control, $F (8, 319) = 2.062$, $p = .039$. This null hypothesis was rejected. A summary of results is presented in Table 4.14.

***Hypothesis 3 – Synthesist.*** *There is no statistically significant difference between Synthesist thinking style preference of female college and university presidents in relation to institutional control.* Based on the results of univariate ANOVA testing, using an alpha level of .05, there was a statistically significant difference between Synthesist thinking style preference of female college and university presidents in relation to institutional control, $F (8, 319) = 2.708$, $p = .007$. This null hypothesis was rejected. A summary of results is presented in Table 4.14.

**Table 4.14**

***Univariate Analysis of Variance of Thinking Style Preferences and Institutional Control***

| | Type III SS | df | MS | F | p |
|---|---|---|---|---|---|
| ANALYST | | | | | |
| Between | 784.042 | 8 | 98.005 | .892 | .523 |
| Within | 35051.897 | 319 | 109.881 | | |
| Total | 35835.939 | 327 | | | |
| IDEALIST | | | | | |
| Between | 1143.834 | 8 | 142.979 | 1.351 | .217 |
| Within | 33751.386 | 319 | 105.804 | | |
| Total | 34895.220 | 327 | | | |
| PRAGMATIST | | | | | |
| Between | 589.966 | 8 | 73.746 | 1.315 | .235 |
| Within | 17894.753 | 319 | 56.096 | | |
| Total | 18484.720 | 327 | | | |
| REALIST | | | | | |
| Between | 1068.635 | 8 | 133.579 | 2.062 | .039 * |
| Within | 20661.413 | 319 | 64.769 | | |
| Total | 21730.049 | 327 | | | |
| SYNTHESIST | | | | | |
| Between | 1052.806 | 8 | 131.601 | 2.708 | .007 * |
| Within | 15504.072 | 319 | 48.602 | | |
| Total | 16556.878 | 327 | | | |

* denotes significance greater than p<.05

### *Research Question 4*

Research question 4 asked, *Do differences in thinking style preference of female college and university presidents exist with regard to highest academic degree earned?* This question was first addressed by MANOVA testing of the corresponding null hypothesis, followed by univariate ANOVA testing of each individual InQ thinking style conceptualization.

***Hypothesis 4.*** *There is no statistically significant difference between thinking style preference of female college and university presidents in relation to highest academic degree earned.* Based on the results of MANOVA testing, using an alpha level of .05, there was no statistically significant difference between thinking style preference of female college and university presidents in relation to highest academic degree earned. This finding of non-significance was evidenced in three of the four MANOVA tests. Roy's Largest Root was the only test indicating significance, yielding p.000. Because Roy's is upper bound on F, this result was disregarded. This null hypothesis was not rejected. A summarization of the results of this MANOVA is presented in Table 4.15.

**Table 4.15**

***Multivariate Analysis of Thinking Style Preference and Highest Academic Degree Earned***

| Effect | Value | F | Hypothesis df | Error df | p |
|---|---|---|---|---|---|
| INTERCEPT | | | | | |
| Pillai's Trace | 1.000 | 14182.67 [a] | 5.000 | 318.000 | .000 |
| Wilks' Lambda | .000 | 14182.67 [a] | 5.000 | 318.000 | .000 |
| Hotelling's Trace | 2345.639 | 14182.67 [a] | 5.000 | 318.000 | .000 |
| Roy's Largest Root | 2345.639 | 14182.67 [a] | 5.000 | 318.000 | .000 |
| CARNEGIE | | | | | |
| Pillai's Trace | .112 | 1.476 | 25.000 | 1600.000 | .061 |
| Wilks' Lambda | .891 | 1.490 | 25.000 | 1331.722 | .057 |
| Hotelling's Trace | .118 | 1.500 | 25.000 | 1572.000 | .054 |
| Roy's Largest Root | .1075 | 4.856[b] | 5.000 | 322.000 | .000 * |

a. Exact statistic
b. The statistic is an upper bound on F that yields a lower bound on the significance level.
* denotes significance greater than p<.05

This same research question was applied in a null hypothesis format for each of the five InQ thinking styles. Following are restatements of each corresponding null hypothesis associated with each of the thinking styles, along with a statement of findings. A summarization of the results for these ANOVAs is presented in Table 4.16.

***Hypothesis 4 – Analyst.*** *There is no statistically significant difference between Analyst thinking style preference of female college and university presidents in relation to highest academic degree earned.* Based on the results of

univariate ANOVA testing, using an alpha level of .05, there was no statistically significant difference between Analyst thinking style preference of female college and university presidents in relation to highest academic degree earned, F (5, 322) = 1.493, p = .192. This null hypothesis was not rejected. A summary of results is presented in Table 4.16.

***Hypothesis 4 – Idealist.*** *There is no statistically significant difference between Idealist thinking style preference of female college and university presidents in relation to highest academic degree earned.* Based on the results of univariate ANOVA testing, using an alpha level of .05, there was a statistically significant difference between Idealist thinking style preference of female college and university presidents in relation to highest academic degree earned, F (5, 322) = 2.342, p = .041. This null hypothesis was rejected. A summary or results is presented in Table 4.16.

***Hypothesis 4 – Pragmatist.*** *There is no statistically significant difference between Pragmatist thinking style preference of female college and university presidents in relation to highest academic degree earned.* Based on the results of univariate ANOVA testing, using an alpha level of .05, there was a statistically significant difference between Pragmatist thinking style preference of female college and university presidents in relation to highest academic degree earned, F (5, 322) = 2.922, p = .013. This null hypothesis was rejected. A summary of results is presented in Table 4.16

***Hypothesis 4 – Realist.*** *There is no statistically significant difference between Realist thinking style preference of female college and university presidents in relation to highest academic degree earned.* Based on the results of univariate ANOVA testing, using an alpha level of .05, there was a statistically significant difference between Realist thinking style preference of female college and university presidents in relation to highest academic degree earned, F (5, 322) = 1.673, p = .141. This null hypothesis was not rejected. A summary of results is presented in Table 4.16.

***Hypothesis 4 – Synthesist.*** *There is no statistically significant difference between Synthesist thinking style preference of female college and university presidents in relation to highest academic degree earned.* Based on the results of univariate ANOVA testing, using an alpha level of .05, there was a statistically significant difference between Synthesist thinking style preference of female college and university presidents in relation to highest academic degree earned, F (5, 322) = 3.116, p = .009. This null hypothesis was rejected. A summary of results is presented in Table 4.16.

**Table 4.16**

***Univariate Analysis of Variance of Thinking Style Preference and Highest Academic Degree Earned***

| | Type III SS | df | MS | F | p |
|---|---|---|---|---|---|
| ANALYST | | | | | |
| Between | 811.745 | 5 | 162.349 | 1.493 | .192 |
| Within | 35024.194 | 322 | 108.771 | | |
| Total | 35835.939 | 327 | | | |
| IDEALIST | | | | | |
| Between | 1224.705 | 5 | 244.941 | 2.342 | .041 * |
| Within | 33670.514 | 322 | 104.567 | | |
| Total | 34895.220 | 327 | | | |
| PRAGMATIST | | | | | |
| Between | 802.396 | 5 | 160.479 | 2.922 | .013 * |
| Within | 17682.324 | 322 | 54.914 | | |
| Total | 18484.720 | 327 | | | |
| REALIST | | | | | |
| Between | 550.347 | 5 | 110.069 | 1.673 | .141 |
| Within | 21179.701 | 322 | 65.775 | | |
| Total | 21730.049 | 327 | | | |
| SYNTHESIST | | | | | |
| Between | 764.250 | 5 | 152.850 | 3.116 | .009 * |
| Within | 15792.628 | 322 | 49.045 | | |
| Total | 16556.878 | 327 | | | |

* denotes significance greater than p<.05

### *Research Question 5*

Research question 5 asked, *Do differences in thinking style preference of female college and university presidents exist with regard to primary area of academic background/specialty?* This question was first addressed by MANOVA testing of the corresponding null hypothesis, followed by univariate ANOVA testing of each individual InQ thinking style conceptualization.

***Hypothesis 5.*** *There is no statistically significant difference between thinking style preference of female college and university presidents in relation to primary area of academic background/specialty.* Based on the results of MANOVA testing, using an alpha level of .05, there was a statistically significant difference between thinking style preference of female college and university presidents in relation to primary area of academic background/specialty. This finding was consistent for all four MANOVA testing methods. The results of each of these tests indicated a significance level of p.000. This null hypothesis was rejected. A summarization of the results of this MANOVA is presented in Table 4.17.

**Table 4.17**

***Multivariate Analysis of Variance of Thinking Style Preference and Primary Area of Academic Background/Specialty***

| Effect | Value | F | Hypothesis df | Error df | Sig. |
|---|---|---|---|---|---|
| INTERCEPT | | | | | |
| Pillai's Trace | 1.000 | 396010.38 [a] | 5.000 | 313.000 | .000 |
| Wilks' Lambda | .000 | 396010.38 [a] | 5.000 | 313.000 | .000 |
| Hotelling's Trace | 6326.044 | 396010.38 [a] | 5.000 | 313.000 | .000 |
| Roy's Largest Root | 6326.044 | 396010.38 [a] | 5.000 | 313.000 | .000 |
| CARNEGIE | | | | | |
| Pillai's Trace | .288 | 1.936 | 50.000 | 1585.000 | .000 * |
| Wilks' Lambda | .736 | 1.990 | 50.000 | 1430.864 | .000 * |
| Hotelling's Trace | .328 | 2.040 | 50.000 | 1557.000 | .000 * |
| Roy's Largest Root | .189 | 5.980[b] | 10.000 | 317.000 | .000 * |

a. Exact statistic
b. The statistic is an upper bound on F that yields a lower bound on the significance level.
* denotes significance greater than p<.05

This same research question was applied in a bull hypothesis format for each of the five InQ thinking styles. Following are restatements of each corresponding null hypothesis associated with each of the thinking styles, along with a statement of findings. A summarization of the results for these ANOVAs is presented in Table 4.18.

***Hypothesis 5 – Analyst.*** *There is no statistically significant difference between Analyst thinking style preference of female college and university presidents in relation to primary area of academic background/specialty.* Based

on the results of univariate ANOVA testing, using an alpha level of .05, there was a statistically significant difference between Analyst thinking style preference of female college and university presidents in relation to primary area of academic background/specialty, F (10, 317) = 2.632, p = .004. This null hypothesis was rejected. A summary of results is presented in Table 4.18.

***Hypothesis 5 – Idealist.*** *There is no statistically significant difference between Idealist thinking style preference of female college and university presidents in relation to primary area of academic background/specialty.* Based on the results of univariate ANOVA testing, using an alpha level of .05, there was a statistically significant difference between Idealist thinking style preference of female college and university presidents in relation to primary area of academic background/specialty, F (10, 317) = 2.714, p = .003. This null hypothesis was rejected. A summary of results is presented in Table 4.18.

***Hypothesis 5 – Pragmatist.*** *There is no statistically significant difference between Pragmatist thinking style preference of female college and university presidents in relation to primary area of academic background/specialty.* Based on the results of univariate ANOVA testing, using an alpha level of .05, there was a statistically significant difference between Pragmatist thinking style preference of female college and university presidents in relation to primary area of academic background/specialty, F (10, 317) = 5.488, p < .000. This null hypothesis was rejected. A summary of results is presented in Table 4.18.

***Hypothesis 5 – Realist:*** *There is no statistically significant difference between Realist thinking style preference of female college and university presidents in relation to primary area of academic background/specialty.* Based on the results of univariate ANOVA testing, using an alpha level of .05, there was no statistically significant difference between Realist thinking style preference of female college and university presidents in relation to primary area of academic background/specialty, $F (10, 317) = 1.441$, $p = .161$. This null hypothesis was not rejected. A summary of results is presented in Table 4.18.

***Hypothesis 5 – Synthesist.*** *There is no statistically significant difference between Synthesist thinking style preference of female college and university presidents in relation to primary area of academic background/specialty.* Based on the results of univariate ANOVA testing, using an alpha level of .05, there was no statistically significant difference between Synthesist thinking style preference of female college and university presidents in relation to primary area of academic background/specialty, $F (10, 317) = 1.017$, $p = .429$. This null hypothesis was not rejected. A summary of results is presented in Table 4.18.

**Table 4.18**

***Univariate Analysis of Variance of Thinking Style Preference and Primary Area of Academic Background/Specialty***

| | Type III SS | df | MS | F | p |
|---|---|---|---|---|---|
| ANALYST | | | | | |
| Between | 2746.935 | 10 | 274.693 | 2.632 | .004 * |
| Within | 33089.004 | 317 | 104.382 | | |
| Total | 35835.939 | 327 | | | |
| IDEALIST | | | | | |
| Between | 2752.061 | 10 | 275.206 | 2.714 | .003 * |
| Within | 32143.159 | 317 | 101.398 | | |
| Total | 34895.220 | 327 | | | |
| PRAGMATIST | | | | | |
| Between | 2727.678 | 10 | 272.768 | 5.488 | .000 * |
| Within | 15757.042 | 317 | 49.707 | | |
| Total | 18484.720 | 327 | | | |
| REALIST | | | | | |
| Between | 944.973 | 10 | 94.497 | 1.441 | .161 |
| Within | 20785.076 | 317 | 65.568 | | |
| Total | 21730.049 | 327 | | | |
| SYNTHESIST | | | | | |
| Between | 514.444 | 10 | 51.444 | 1.017 | .429 |
| Within | 16042.434 | 317 | 50.607 | | |
| Total | 16556.878 | 327 | | | |

* denotes significance greater than p<.05

### *Research Question 6*

Research question 6 asked, *Do differences in thinking style preference of female college and university presidents exist with regard to president's age?* This question was first addressed by MANOVA testing of the corresponding null hypothesis, followed by univariate ANOVA testing of each individual InQ thinking style conceptualization. For this question, age in interval years was used, as opposed to categorical classifications. This allowed for more accurate data analysis.

***Hypothesis 6.*** *There is no statistically significant difference between thinking style preference of female college and university presidents in relation to president's age.* Based on the results of MANOVA testing, using an alpha level of .05, there was a statistically significant difference between thinking style preference of female college and university presidents in relation to president's age. This null hypothesis was rejected. A summarization of the results of this MANOVA is presented in Table 4.19.

**Table 4.19**

***Multivariate Analysis of Variance of Thinking Style Preference and Age***

| Effect | Value | F | Hypothesis df | Error df | Sig. |
|---|---|---|---|---|---|
| INTERCEPT | | | | | |
| Pillai's Trace | 1.000 | 832615.74 [a] | 5.000 | 296.000 | .000 |
| Wilks' Lambda | .000 | 832615.74 [a] | 5.000 | 296.000 | .000 |
| Hotelling's Trace | 14064.455 | 832615.74 [a] | 5.000 | 296.000 | .000 |
| Roy's Largest Root | 14064.455 | 832615.74 [a] | 5.000 | 296.000 | .000 |
| CARNEGIE | | | | | |
| Pillai's Trace | .990 | 2.743 | 135.000 | 1500.000 | .000 * |
| Wilks' Lambda | .321 | 2.815 | 135.000 | 1464.964 | .000 * |
| Hotelling's Trace | 1.323 | 2.885 | 135.000 | 1472.000 | .000 * |
| Roy's Largest Root | .542 | 6.019[b] | 27.000 | 300.000 | .000 * |

a. Exact statistic
b. The statistic is an upper bound on F that yields a lower bound on the significance level.
* denotes significance greater than p<.05

This same research question was applied in a null hypothesis format for each of the five InQ thinking styles. Following are restatements of each corresponding null hypothesis associated with each of the thinking styles, along with a statement of findings. A summarization of the results for these ANOVAs is presented in Table 4.20.

***Hypothesis 6 – Analyst.*** *There is no statistically significant difference between Analyst thinking style preference of female college and university presidents in relation to president's age.* Based on the results of univariate

ANOVA testing, using an alpha level of .05, there was a statistically significant difference between Analyst thinking style preference of female college and university presidents in relation to president's age, F (27, 300) = 2.260, p = .001. This null hypothesis was rejected. A summary of results is presented in Table 4.20.

***Hypothesis 6 – Idealist.*** *There is no statistically significant difference between Idealist thinking style preference of female college and university presidents in relation to president's age.* Based on the results of univariate ANOVA testing, using an alpha level of .05, there was a statistically significant difference between Idealist thinking style preference of female college and university presidents in relation to president's age, F (27, 300) = 2.260, p < .000. This null hypothesis was rejected. A summary of results is presented in Table 4.20.

***Hypothesis 6 – Pragmatist.*** *There is no statistically significant difference between Pragmatist thinking style preference of female college and university presidents in relation to president's age.* Based on the results of univariate ANOVA testing, using an alpha level of .05, there was a statistically significant difference between Pragmatist thinking style preference of female college and university presidents in relation to president's age, F (27, 300) = 4.553, p < .000. This null hypothesis was rejected. A summary of results is presented in Table 4.20.

***Hypothesis 6 – Realist.*** *There is no statistically significant difference between Realist thinking style preference of female college and university presidents in relation to president's age.* Based on the results of univariate ANOVA testing, using an alpha level of .05, there was a statistically significant difference between Realist thinking style preference of female college and university presidents in relation to president's age, $F (27, 300) = 3.745$, $p < .000$. This null hypothesis was rejected. A summary of results is presented in Table 4.20.

***Hypothesis 6 – Synthesist.*** *There is no statistically significant difference between Synthesist thinking style preference of female college and university presidents in relation to president's age.* Based on the results of univariate ANOVA testing, using an alpha level of .05, there was a statistically significant difference between Synthesist thinking style preference of female college and university presidents in relation to president's age, $F (27, 300) = 2.381$, $p < .000$. This null hypothesis was rejected. A summary of results is presented in Table 4.20.

**Table 4.20**

***Univariate Analysis of Variance of Thinking Style Preference and Age***

| | Type III SS | df | MS | F | p |
|---|---|---|---|---|---|
| ANALYST | | | | | |
| Between | 6058.081 | 27 | 224.373 | 2.260 | .001 * |
| Within | 29777.859 | 300 | 99.260 | | |
| Total | 35835.939 | 327 | | | |
| IDEALIST | | | | | |
| Between | 9107.208 | 27 | 337.604 | 3.924 | .000 * |
| Within | 25788.011 | 300 | 85.960 | | |
| Total | 34895.220 | 327 | | | |
| PRAGMATIST | | | | | |
| Between | 5372.557 | 27 | 198.984 | 4.553 | .000 * |
| Within | 13112.163 | 300 | 43.707 | | |
| Total | 18484.720 | 327 | | | |
| REALIST | | | | | |
| Between | 5477.497 | 27 | 202.870 | 3.745 | .000 * |
| Within | 16252.552 | 300 | 54.175 | | |
| Total | 21730.049 | 327 | | | |
| SYNTHESIST | | | | | |
| Between | 2922.015 | 27 | 108.223 | 2.381 | .000 * |
| Within | 13634.863 | 300 | 45.450 | | |
| Total | 16556.878 | 327 | | | |

* denotes significance greater than p<.05

### *Research Question 7*

Research question 7 asked, *Do differences in thinking style preference of female college and university presidents exist with regard to total years of college or university presidential experience?* This question was first addressed by MANOVA testing of the corresponding null hypothesis, followed by univariate ANOVA testing of each individual InQ thinking style conceptualization. For this question, total years of college or university presidential experience as interval years was used, as opposed to categorical classifications. This allowed for more accurate data analysis.

***Hypothesis 7.*** *There is no statistically significant difference between thinking style preference of female college and university presidents in relation to total years of college or university presidential experience.* Based on the results of MANOVA testing, using an alpha level of .05, there was a statistically significant difference between thinking style preference of female college and university presidents in relation to college or university presidential experience. This finding was consistent for all four MANOVA testing methods. The results of each of these tests indicated a significance level of p.000. This null hypothesis was rejected. A summarization of the results of this MANOVA is presented in Table 4.21.

**Table 4.21**

***Multivariate Analysis of Variance of Thinking Style Preference and Total Years of College or University Presidential Experience***

| Effect | Value | F | Hypothesis df | Error df | Sig. |
|---|---|---|---|---|---|
| INTERCEPT | | | | | |
| Pillai's Trace | 1.000 | 819360.41 [a] | 5.000 | 298.000 | .000 |
| Wilks' Lambda | .000 | 819360.41 [a] | 5.000 | 298.000 | .000 |
| Hotelling's Trace | 13747.658 | 819360.41 [a] | 5.000 | 298.000 | .000 |
| Roy's Largest Root | 13747.658 | 819360.41 [a] | 5.000 | 298.000 | .000 |
| CARNEGIE | | | | | |
| Pillai's Trace | .772 | 2.206 | 125.000 | 1510.000 | .000 * |
| Wilks' Lambda | .423 | 2.246 | 125.000 | 1471.466 | .000 * |
| Hotelling's Trace | .962 | 2.281 | 125.000 | 1482.000 | .000 * |
| Roy's Largest Root | .358 | 4.324[b] | 25.000 | 302.000 | .000 * |

a. Exact statistic
b. The statistic is an upper bound on F that yields a lower bound on the significance level.
* denotes significance greater than p<.05

This same research question was applied in a null hypothesis format for each of the five InQ thinking styles. Following are restatements of each corresponding null hypothesis associated with each of the thinking styles, along with a statement of findings. A summarization of the results for these ANOVAs is presented in Table 4.22.

***Hypothesis 7 – Analyst.*** *There is no statistically significant difference between Analyst thinking style preference of female college and university presidents in relation to total years of college or university presidential*

*experience*. Based on the results of univariate ANOVA testing, using an alpha level of .05, there was a statistically significant difference between Analyst thinking style preference of female college and university presidents in relation to total years of college or university presidential experience, F (25, 302) = 3.495, p < .000. This null hypothesis was rejected. A summary of results is presented in Table 4.22.

***Hypothesis 7 – Idealist.*** *There is no statistically significant difference between Idealist thinking style preference of female college and university presidents in relation to total years of college or university presidential experience*. Based on the results of univariate ANOVA testing, using an alpha level of .05, there was a statistically significant difference between Idealist thinking style preference of female college and university presidents in relation to total years of college or university presidential experience, F (25, 302) = 3.121, p < .000. This null hypothesis was rejected. A summary of results is presented in Table 4.22.

***Hypothesis 7 – Pragmatist.*** *There is no statistically significant difference between Pragmatist thinking style preference of female college and university presidents in relation to total years of college or university presidential experience*. Based on the results of univariate ANOVA testing, using an alpha level of .05, there was a statistically significant difference between Pragmatist thinking style preference of female college and university presidents in relation to

total years of college or university presidential experience, F (25, 302) = 2.216, p = .001. This null hypothesis was rejected. A summary of results is presented in Table 4.22.

***Hypothesis 7 – Realist.*** *There is no statistically significant difference between Realist thinking style preference of female college and university presidents in relation to total years of college or university presidential experience.* Based on the results of univariate ANOVA testing, using an alpha level of .05, there was a statistically significant difference between Realist thinking style preference of female college and university presidents in relation to total years of college or university presidential experience, F (25, 302), = 1.654, p = .028. This null hypothesis was rejected. A summary of results is presented in Table 4.22.

***Hypothesis 7 – Synthesist.*** *There is no statistically significant difference between Synthesist thinking style preference of female college and university presidents in relation to total years of college or university presidential experience.* Based on the results of univariate ANOVA testing, using an alpha level of .05, there was a statistically significant difference between Synthesist thinking style preference of female college and university presidents in relation to total years of college or university presidential experience, F (25, 302) = 1.963, p = .005. This null hypothesis was rejected. A summary of results is presented in Table 4.22.

**Table 4.22**

***Univariate Analysis of Variance of Thinking Style Preference and Total Years of College or University Presidential Experience***

| | Type III SS | df | MS | F | p |
|---|---|---|---|---|---|
| ANALYST | | | | | |
| Between | 8041.673 | 25 | 321.667 | 3.495 | .000 * |
| Within | 27794.266 | 302 | 92.034 | | |
| Total | 35835.939 | 327 | | | |
| IDEALIST | | | | | |
| Between | 7165.276 | 25 | 286.611 | 3.121 | .000 * |
| Within | 27729.943 | 302 | 91.821 | | |
| Total | 34895.220 | 327 | | | |
| PRAGMATIST | | | | | |
| Between | 2864.962 | 25 | 114.598 | 2.216 | .001 * |
| Within | 15619.758 | 302 | 51.721 | | |
| Total | 18484.720 | 327 | | | |
| REALIST | | | | | |
| Between | 2616.734 | 25 | 104.669 | 1.654 | .028 * |
| Within | 19113.315 | 302 | 63.289 | | |
| Total | 21730.049 | 327 | | | |
| SYNTHESIST | | | | | |
| Between | 2314.227 | 25 | 92.569 | 1.963 | .005 * |
| Within | 14242.651 | 302 | 47.161 | | |
| Total | 16556.878 | 327 | | | |

* denotes significance greater than p<.05

## Chapter Summary

When thinking style scores for individual participants were examined, the quantitative results of this study indicated that there were preferences for different styles of thinking and that female college and university presidents appear to think differently from each other, depending on various independent variables. Some thinking styles were more predominant than others. Among the study respondents, there was a marked preference for the Idealist and Analyst thinking styles, representing 43.60% and 33.23%, respectively, of the presidents with regard to their single highest score area. The mean Idealist score was 61.0488 and the mean Analyst score was 58.5793, each more than one full standard deviation different from mean scores for Pragmatist, Realist, and Synthesist styles.

Detailed multivariate analysis of the mean score results indicate significant differences that relate Carnegie classification, institutional control, primary area of academic background/specialty, age, and/or total years of college or university presidency to thinking style. More detailed ANOVA testing indicated statistically significant differences between 20 of 30 possible relationships between the independent and dependent variables.

Analysis of individual tabulated scores showed predominant thinking styles for all participants with the exception of nine women. Moderate preferences for the single highest score (scores between 60 and 65) were identifiable for 131 (39.94%) of the 328 survey respondents. Strong preferences for the single highest score (scores between 66 and 71) were identifiable for 108 (32.93%) of the survey respondents, with a commitment to a dominant approach

to thinking (score of 72 or higher) identifiable for 80 (24.39%) of the survey respondents. Of those individuals with dominant single highest scores, 41 were in the Analyst style, 37 in the Idealist style, and two were Analyst-Idealist dual style dominant thinkers.

The results of this study suggest that there is a preference for the Idealist and Analyst styles of thinking for female college and university presidents. Results also suggest that most thinking styles are significantly related to president's age, area of academic specialty/background, and total years of college or university presidency. Some thinking styles are statistically significant when compared to Carnegie classification and control of the institutions.

# CHAPTER V

## CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

The purpose of this study was two-fold: to identify the thinking style preferences of female college and university presidents at selected private and public institutions, and to determine if differences in thinking style preference exist with regard to Carnegie classification, institutional control, highest academic degree earned, primary area of academic background/specialty, age, and total years of college or university presidential experience. This is the first known research on thinking styles of female college and university presidents that has been conducted on a national level. Research has indicated that thinking style differences are a significant element associated with leadership, communication, and management. The possibility exists that a greater understanding of thinking styles, and an exploration of thinking styles of female college and university presidents, may offer a rationale for explaining evidenced variations in these other stylistic aspects.

Chapter V presents a final summary of the research study. The information of this chapter is organized into eight sections: (a) design, (b) participants, (c) procedures, (d) restatement of research questions and results, (e) summary and discussion of findings, (f) conclusions, (g) implications, and (h) recommendations for future research.

## Design

The study was grounded in a combination of two theoretical concepts: Contingency Leadership Theory with emphasis on the work of Fiedler (1967), and Thinking Style Theory as first proposed by Allport in 1937. This study was designed to be causal-comparative and descriptive in nature, and was executed by taking a between-subjects approach to the selected design. This research was non-experimental in nature, as random assignment to groups was not made.

The independent variables associated with this study were categorical and passive in nature. The independent variables were (a) Carnegie classification, (b) institutional control, (c) highest academic degree earned, (d) primary area of academic background/specialty, (e) age, and (f) total years of college or university presidency. Each independent variable had a minimum of four factors, or categories, but there was no ordering to these categories. The independent variables were passive in that the research was non-experimental and there was no manipulation of such variables.

The dependent variable associated with this study was thinking style. Specifically, there were five thinking styles associated with the InQ instrument. The five styles are Analyst, Idealist, Pragmatist, Realist, and Synthesist. In this study, differences were tested between each of the independent variables and thinking style in general. Follow-up testing allowed for each independent variable to be tested for differences between each individual thinking style.

## Participants

The population selected for this national study was all female college and university presidents at select public and private institutions of higher education located within the United States. A total of 328 usable responses were received from a total of 595 identified presidents, for an overall rate of 55.13%. The overall response activity resulted in usable surveys from 57.93% of female presidents at Associate colleges, 48.21% of female presidents at Baccalaureate institutions, 56.67% of female presidents at Master's institutions and 45.71% of female presidents from Doctoral universities.

The greatest percentage (39.6%) of participants were employed in state-controlled institutions. Independent institutions house 23.8% of the participants in this study, with 18.9% at combination State/Local controlled colleges.

The vast majority (87.8%) hold a doctoral or professional degree, and 40.9% noted that their primary area of academic background/specialty was in the field of Education. There were 16.5% of the participants with an academic specialty in Humanities, and the areas of Business and Social Sciences each comprised 10.4% of the participants, respectively.

One-third of the participants were between 55 and 59 years of age. A total of 61.5% of participants were between 55 and 64 years of age, with the mean age being 58.6 years. The youngest participant was 42 years of age, and the oldest participant was 74 years old.

Approximately one-third of participants had been presidents for 1-5 years, with another third holding presidential positions for 6-10 years. The range of presidential experience was one to 38 years, with a mean of 9.27 years.

## Procedures

The self-administered InQ survey and a demographic data questionnaire designed by the researcher were used to collect the data for this study. The InQ surveys were scored for each participant as the questionnaires were received, and these scores entered into a computerized database. Responses provided on the demographic data form were coded and categorized, as appropriate, and entered into the same database. The InQ scores and demographic data were crosschecked for accuracy prior to commencing statistical analysis.

Descriptive statistical analysis, inclusive of frequency tables, measures of central tendency, and measures of variability were utilized in order to address the first research question. The remaining six research questions were addressed through the use of initial MANOVA testing, followed by ANOVA testing for validation and additional support. Each null hypothesis was tested at the .05 alpha level of statistical significance.

## Restatement of Research Questions and Summary of Results

A total of seven primary research queries were addressed in this study.

*Research question 1:* What is the predominant thinking preference(s) of female presidents at colleges and universities within the United States? The characteristic thinking styles associated most often with participants in this study included the Idealist and Analyst styles, respectively. This finding was

widespread, as a significant majority of participants fell into one of these two thinking style categories.

*Research question 2:* Do differences in thinking style preference of female college and university presidents exist with regard to institutional Carnegie classification? Results indicated that there was a significant difference between thinking style and Carnegie classification. When this research question was applied to each of the five individual InQ thinking style conceptualizations, significant differences were noted for the Pragmatist and Realist thinking styles. Results did not indicate strong differences between Analyst, Idealist, or Synthesist styles thinking styles with Carnegie classification.

*Research question 3:* Do differences in thinking style preference of female college and university presidents exist with regard to institutional control? Results indicated that there was a strong difference between thinking style and institutional control. When this research question was applied to each of the five individual InQ thinking style conceptualizations, significant differences were noted for the Realist and Synthesist thinking styles. Results did not indicate strong relations between Analyst, Idealist, or Pragmatist thinking styles with institutional control.

*Research question 4:* Do differences in thinking style preference of female college and university presidents exist with regard to highest academic degree earned? The results of this study did not support significant differences between thinking style and highest academic degree earned. When this research question was applied to each of the five individual thinking style

conceptualizations, significant differences were noted for the Idealist, Pragmatist, and Synthesist styles, however. Results did not indicate strong relations between Analyst or Realist styles with regard to highest academic degree earned.

*Research question 5:* Do differences in thinking style preference of female college and university presidents exist with regard to primary area of academic background/specialty? Results indicated that there was a strong difference between thinking style and primary area of academic background/specialty. When this research question was applied to each of the five individual InQ thinking style conceptualizations, significant differences were noted for the Analyst, Idealist, and Pragmatist styles. Results did not indicate strong differences between Realist or Synthesist thinking styles with primary area of academic background/specialty.

*Research question 6:* Do differences in thinking style preference of female college and university presidents exist with regard to age? Results indicated that there was a strong difference between thinking style and age. When this research question was applied to each of the five individual InQ thinking style conceptualizations, significant differences were noted for all five of the thinking styles.

*Research question 7:* Do differences in thinking style preference of female college and university presidents exist with regard to total years of college or university presidential experience? Results indicated that there was a strong difference between thinking style and total years of college or university presidential experience. When this research question was applied to each of the

five InQ thinking style conceptualizations, significant differences were noted for all five of the thinking styles.

## Summary and Discussion of Findings

Based on assessment of the results of data analysis of the study, eight significant findings were identified pertaining to female college and university presidents. This research study revealed that: (a) the presidents have Idealist and Analyst thinking style tendencies; (b) the presidents have dominant or strong thinking style preferences; (c) there is a significant difference between Carnegie classification and thinking style preference; (d) there is a significant difference between institutional control and thinking style preference; (e) there is a significant difference between primary area of academic background/specialty and thinking style preference; (f) there is a significant difference between age and thinking style preference; (g) there is a significant difference between years of presidential experience and thinking style preference; and (h) there is a uniform demographic and thinking style profile of the presidents.

### *Idealist and Analyst Thinking Style Tendency*

The first finding of this study entails a score distribution on the InQ that indicates a tendency for the female college and university presidents participating in this study to prefer the Idealist and/or Analyst thinking styles. Single highest raw scores on the InQ denoted that 43.60% preferred the Idealist style, while 33.23% preferred the Analyst style. In addition, two individuals had equal highest scores in both the Idealist and Analyst styles.

Of the 143 presidents whose single highest score was in the Idealist style, 67 had a second highest score in the Analyst thinking style. Of the 109 presidents whose single highest score was in the Analyst style, 72 had a second highest score in the Idealist thinking style. Overall, 77.44% of respondents had a single highest score in the Analyst or Idealist styles.

Each of the InQ thinking styles has very specific characteristics. Within the domain of female college of university presidency, Idealists and Analyst thinkers are most likely to be observed. These predominantly Idealist women will tend to approach situations with a very broad view, seeking ideal solutions while still focusing on values. Female presidents with Idealist thinking styles tend to provide an environment that focuses on holistic ideology, focusing on the processes and differences that guide their practice. They may be guilty of disregarding concrete data in lieu of searching for that one perfect solution that will be most acceptable to the majority. At times, these women may appear excessively sentimental, but this is because of the fervent interest in preserving differences.

Female presidents who hold the Analyst thinking style will tend to approach situations with a very deductive eye, as they are in search of a single best solution that is based on hard, scientific data. These women are very structured, and provide an environment that is very stable and structured. From the outside, they may appear somewhat tunnel-visioned or even inflexible. They are very cautious in their actions, and do tend to hold strong to ideas and values that are concrete and have been proven in the past. These women do, however,

provide an environment that focuses heavily on the rational examination of ideas, and the more supportive documentation or information that can be provided to these women, the more effective work relationships may be.

The thinking style of these women will influence what cognitive processes they incorporate in order to adapt to the various environments in which they will undoubtedly find themselves. Their preferred mode of thinking also play a large role in how these women work with individuals with a diversity of other stylistic differences on a daily basis. Idealist female college and university presidents are very apt to appear attentive, receptive, and supportive of others. They may express personal feelings or ideas regarding values or what they believe to be the right thing to do. Discussions with this type of thinker may be more productive if the tone is sentimental, providing for consideration of the reactions and emotions of others. Discussions that focus on material that is conflictive, excessively scientific, or that does not consider the situation holistically are not well received by this type of thinker.

Analyst female college and university presidents are apt to appear studious, disinterested, and hard to read. It is not that they are disinterested in the topic, however. It needs to be understood that this type of thinker processes information in a way that is more internally private, and this leaves very few external behavioral cues. These women are likely to provide lots of supporting data, and those who engage in dialog with this type of female president will tend to be more successful if they approach the situation with an eye toward logic as well. Her vocabulary tends to be highly advanced, and she is most likely to use

elongated well-formulated prose. She is most productive when provided the opportunity to gather her thoughts before replying to a question or addressing a particular situation. It's not that she doesn't know what to say or do, but simply that she is looking, again, for that one best way to deal with that particular situation.

### *Dominant/Strong Thinking Style Preference*

The second finding of this study signifies that many female college and university presidents have a dominant or strong preference for using a particular thinking style. This differs from the first finding in that the focus is on the strength associated with the use of the most preferred style. The data indicated a tendency for the preferred thinking style to be utilized at a dominant or very strong level. The higher an individual scores in a particular InQ thinking style, the more likely that person is to make committed use of that style. An individual is considered to be a *dominant style thinker* if their score in that particular style is 72 to 90.

In this study, there were 80 participants (24.39%) with a dominant style. Of those with a dominant approach toward thinking, 41 (51.25%) were dominant in the Analyst style, with another 37 (46.25%) indicating dominance in the Idealist style. Two individuals were equally dominant in two styles, one person as Analyst-Idealist, and the other as Analyst-Realist. Of notable interest, there were *no* other thinking styles in which participants were dominant.

Results from this study also indicated that 108 participating presidents (32.93%) showed a *strong* inclination for using a particular thinking style or

thinking style combination. Of those with a strong inclination towards using a particular style, 68 (62.96%) indicated strength in the Idealist style, with another 24 individuals (22.22%) indicating strength in the Analyst style. Nine participants indicated strength in the Pragmatist style of thinking, seven in the Realist style, and none in the Synthesist style.

### *Carnegie Classification and Thinking Style Preference*

The third finding from this study is that there is a significant difference between Carnegie classification and thinking style preference of female college and university presidents. For the purposes of this study, Carnegie classifications were grouped into four primary categories: Associate, Baccalaureate, Master's, and Doctoral. This was done because there were some individual classifications with small quantities of participants, and this would have skewed data analysis.

When looking at thinking style preference by individual Carnegie classifications, rather than the four classification groupings, it is notable that there were no presidents in the Baccalaureate-Liberal Arts classification that had a single highest thinking style score in any areas other than Analyst or Idealist. The majority of these women were Analyst thinkers. Similar findings were noted from women at Baccalaureate-General institutions, with only two presidents having top scores in an area other than Analyst or Idealist. Presidents of Baccalaureate/Associate's institutions were more diverse in predominant thinking style preference. Six of the 16 presidents in this group had their highest scores in the Pragmatist thinking style. Of all the Carnegie classifications, the women from

Baccalaureate/Associate institutions were the highest percentage of thinkers in an area other than Analyst or Idealist.

In Doctoral institutions, 10 of the 16 women had their top score in the Idealist style, with the remaining six being predominant Analyst thinkers. The scores for these women in the Synthesist style were very low, and scores in Pragmatist and Realist styles were low to moderate. Only 13 of the 68 presidents at Master's institutions had a top thinking style score in an area other than Analyst or Idealist. The top overall choice was Idealist, with most of these women then scoring second highest in the Analyst style.

### *Institutional Control and Thinking Style Preference*

The fourth finding from this study is that there is a significant difference between institutional control and thinking style of female college and university presidents. Presidents at privately controlled institutions appear to have more of a flat or even thinking style tendency than do presidents at institutions with different control structures. Detailed investigation and testing was not incorporated in order to address the differences between specific institutional control classifications and thinking style, as this was not the focus of this study.

### *Primary Area of Academic Background/Specialty and Thinking Style Preference*

The fifth finding from this study is that there is a significant difference between female college and university presidents' primary area of academic background/specialty and thinking style. Although this study did not explore the differences between specific areas of academic background/specialty with regard to

thinking styles, certain trends were noticed in the data. Participants whose primary area was Business had top thinking style scores fairly evenly distributed among four of the five styles, with the style of Synthesist being represented by only one president in this group. Participants with a primary area in the broad field of Social Sciences were predominantly Idealist thinkers, with about half as many with a highest score in the Analyst style. Those with a primary area in Humanities were overwhelmingly Idealist, with some scoring highest in Analyst, and a few with scores out among the remaining thinking styles.

The area of academic background/specialty that was seen most frequently in this study was Education. Participants who are at Associate's and Master's classified institutions and whose primary area is Education tended to have a highest thinking style score evenly spread between Idealist and Analyst. Women at Baccalaureate institutions whose primary area is Education have highest scores in Analyst, Idealist, and Pragmatist styles. Respectively, when looking at Doctoral institutions, the only area of highest score for women with an Education background was the Idealist style, with exception of one president who had an even or flat thinking style preference.

### *Age and Thinking Style Preference*

The sixth finding from this study involves the difference between age and thinking style preference of female college and university presidents. One distinguishing characteristic of this study was the strong differences noted between age and all five of the InQ thinking styles. Age of the president was the

first area noted in which significance was evidenced overall, as well as independently for all five styles.

The women who participated in this study ranged in age from their early 40s to mid 70s. General assessment of age and thinking style scores from this study indicated that substantially lower scores were evidenced for the thinking style of Synthesist for those presidents 64 years of age or older. Other age categories were looked at in comparison to individual thinking style scores, but no distinct trends were noted with regard to a particular style. For many women, it appears that the older they are, the higher the score in the top area and the lower their score in the least preferred area. Still, there was a substantial quantity of women where it was noted that older women tended to have scores with a smaller range of difference.

### *Years of Presidential Experience and Thinking Style Preference*

The seventh finding from this study entails the difference between years of presidential experience and thinking style preference. In addition to the findings associated with age, another distinctive characteristic of this study was the robust differences noted between total years of presidential experience and thinking style preference. There were significant differences found between total years of presidential experience and all five of the InQ thinking styles.

The women in this study ranged from a first year president to one who had held the role at her same institution for 38 years. General assessment of total years of college or university presidential experience and thinking style scores indicated that presidents with a top score in the Analyst style tended to have three

to 10 years of presidential experience. With the exception of one participant, presidents with a top score in the Realist thinking style had been president for seven to 12 years. While those presidents with a top score in the Pragmatist style ranged widely with regards to years of presidential experience, this type of thinker was more likely to be seen in presidents with one to three years of experience, as well as those with seven to 10 years of experience.

### *Demographic and Thinking Style Profile*

The eighth finding of this study indicates that there is a uniform demographic and thinking style profile of female college and university presidents. Based on the results of this study, the typical female college or university president within the United States is 59 years of age, holds a Doctorate in Education, and has served as president for nine years. She is president at an Associate institution that is controlled by the state. She has a strong disposition towards the Idealist thinking style, with inclination to utilize the Analyst thinking style as well. She has a neutral preference for the Realist and Pragmatist thinking styles, and expresses a moderate disinclination in using the Synthesist thinking style.

## Conclusions

Several conclusions from the study would fall within what Cone and Foster (2002) called convergent findings. Convergent findings are those findings that are similar to the findings of comparable research. Differences in findings of similar research are what Cone and Foster (2002) refer to as divergent findings. This study resulted in only one divergent finding, with Brown (2000). However,

there were other convergent findings between this research and that conducted by Brown.

The studies noted here include those focusing on thinking styles, leadership styles, management styles, or demographic characteristics of female college and university presidents. Conclusions entailing converging themes are presented to directly support the work of Borlandoe (2005), Brown (2000), Gregory (2003), Guill (1991), Jablonski (1992), Jones (1986) Miller (1987), and Velivis (1990), in their research on female college and university presidents.

### *Idealist or Analyst Thinkers*

The first conclusion of this study is that a great majority of female college and university presidents are Idealist or Analyst thinkers. This is similar to findings noted by Borlandoe (2005), who utilized the InQ and studied the thinking styles of female college and university administrators in three Mid-Atlantic States. Borlandoe concluded that there was a notable preference for the Idealist and Analyst styles for current and former female college presidents, vice presidents, and executive directors.

A total of 34 current and former college presidents, vice presidents, and executive directors were included in Borlandoe's study, with 12 (35.29%) being designated as Idealist thinkers and 10 (29.41%) designated as Analyst thinkers. This current study strongly supports Borlandoe's findings. Because this current study was conducted on a national level, there is now overwhelming data-based evidence for the notion that female presidents have particular modes of thinking, and that these modes are Idealist and Analyst.

### *Differences Between Leadership Style and Thinking Style*

The second conclusion of this study is that there are strong differences between leadership style and thinking style of female college and university presidents. Miller (1987) found that female college and university presidents had a self-perception of leadership with great emphasis on interaction, employee relations and employee recognition. These leadership characteristics are aligned with characteristics of the Idealist thinking style, which had more single highest scores than any other thinking style in this study.

Velivis (1990) had findings that supported the work of Jones (1986), who found that female college and university presidents over the age of 40 were more collaborative leaders, with emphasis on participative decision-making. Another researcher with aligned findings was Jablonski (1992) who found that female presidents were generative leaders who focused on empowerment, collaboration, and fostering communication. Recently, Gregory (2003) found that female community college presidents encompassed leadership qualities of cooperation, and concern for personal relationships. The findings from each of these studies are similar in that they embrace characteristics of the Idealist thinking style.

This current study provides additional support for the findings of Miller (1987), Velivis (1990), Jones (1986), Jablonski (1992), and Gregory (2003). Data-based evidence now exists on a national level which corroborates these previous findings. This study adds an additional dimension of understanding leadership style, and provides further confirmation of the link between leadership style and thinking style.

### *Carnegie Classification and Thinking Style*

The third conclusion of this study is that there is a difference between Carnegie classification and thinking style of female college and university presidents. Miller (1987) initially noted differences in leadership style of female college and university presidents based on Carnegie classification. It is the strong connections between leadership style and thinking style that allow for this study to provide support for Miller's work. Because this study incorporated a testing procedure to include all female presidents at Associate's, Baccalaureate, Master's and Doctoral institutions, the remarkable response rate achieved provides additional validity for making the conclusion.

### *Thinking Style and Institutional Control*

The fourth conclusion of this study is that there is a difference between thinking style of female college and university presidents and institutional control. One may conclude that the possibility exists that the selection committees who are responsible for the hiring decisions of college and university presidents tend to favor a particular mode of thinker. This preference may be dependent upon various factors; however, this study does provide evidence of a strong link between the thinking styles of female presidents in comparison with the control structure of their institutions.

### *Predominant Disciplinary Specialty in Education*

The fifth conclusion of this study is that female presidents have a predominant disciplinary specialty in Education. Prior thinking style research indicated that individuals with Education careers tend to be thinkers with personal

characteristics that are aligned with the Idealist style. It is appropriate to say that female college and university presidents are more likely to be selected if they have a primary area of academic background/specialty in the field of Education.

This finding is somewhat divergent from the work of Brown (2000), who found that 27% of female college and university presidents had Education backgrounds, and 30% of female college and university presidents had backgrounds in Humanities/Fine Arts. This current nationwide study indicated that nearly 41% of female college and university presidents had Education backgrounds, with about half as many with backgrounds or areas of specialty in Humanities or Arts.

### *Occupational Choice and Thinking Style*

The sixth conclusion of this study is that there is a difference between occupational choice and thinking style. Prior thinking style research dealing with differences with occupation indicated that females from Business backgrounds, or female Executives in general, tend to be Analyst thinkers. The role of a female college and university president is one that incorporates both an educational facet as well as one of an executive role. This further supports the findings from this study, whereby these participating female college and university presidents were more likely to be Idealists and/or Analysts thinkers.

### *Aging Female Presidential Workforce*

The seventh conclusion of this study is that the female college and university presidency is comprised of an aging workforce. Results from Brown (2000) indicated that 60% of female college and university presidents were

between 50 and 59 years of age, with another 27% being 60 years of age or older. In this study, about 52% of participants were between 50 and 59 years old, with 43% being age 60 or older. This indicates evidence of a workforce that is moving into later years of life, without being balanced by workers who are entering the profession at a younger age.

### *Age of Presidents at Beginning of Presidential Career*

The eighth conclusion of this study is that women who are college and university presidents are more likely to be selected as president early into their fifth decade of life. According to this study, the typical female college or university president is 59 years of age. In the United States, individuals typically complete doctoral degrees between ages 40 and 45 (*Chronicle, 2006*). Based on average years of presidential experience, these data support the notion that it takes a female approximately 10 years after earning the doctorate degree to attain the necessary experience necessary to be selected as a college president. However, it can be reasonably assumed that these females could have been involved in administrative educational jobs before attaining their doctorates and thus, could attain the rank of president in a shorter length of time.

### *Years of Experience*

The ninth conclusion of this study is that female college and university presidents typically have nine years of experience. This study did not attempt to clarify length of time at particular institutions, and conclusion cannot be made that these women have served nine years at their current institutions. Brown (2000) noted that 50% of female college and university presidents had served in

this capacity for five years or less, with another 30% having served from 6 to 10 years. This provides further support for previous conclusions that the female college and university workforce is aging, and that they are remaining in these jobs for longer periods of time. At the time of Brown's study, the typical female president had served as president at an institution of higher education for seven years.

In addition to supporting the work of Brown (2000), this study provides additional validation for some findings from Guill (1991). Studying the conflict management preferences of community college presidents, Guill noted no sex-based differences, but did note significant differences between management preferences and years of presidential experience. Management behaviors are expressed traits that are related to thinking styles. The significant differences noted in this present study between thinking styles and total years of college or university presidency can offer basis for concluding the differences between management preference and thinking style.

### *Expectation of Doctoral Level Education*

The tenth conclusion of this study is the customary expectation that females desiring to be college or university presidents have attained a doctoral degree. This study suggests that women that want to be college or university presidents need to attain this highest academic degree available in their chosen field. In this study, 87.8% of participants had attained a doctoral-level degree, and another 1.8% had completed all requirements for a doctoral degree with exception of the dissertation. This is similar to the findings of Brown (2000), who

noted that 93.3% of participating female college and university presidents had doctorates.

### *Appropriate Theoretical Framework for Thinking Style Research*

The eleventh conclusion of this study is that Contingency Leadership Theory and general Thinking Style Theory were appropriate guides in studying thinking styles of female college and university presidents. This study focused on the Contingency Leadership Theory proposed by Fiedler (1967), which emphasized personality and situation being the factors that could predict effectiveness in a given situation. Thinking Style Theory was also highlighted, culminating in the works of Harrison and Bramson (1977, 1982, 1984) who were the creators of the InQ.

The link between personality and thinking style being made, Fiedler (1967) suggested that the manner in which an individual functions within a particular environment is highly dependent upon his or her thinking style. The same belief was the central focus of the work of Harrison and Bramson (1977, 1982, 1984). Based on this prior research, it can be said that the effectiveness of a female college or university president within her specific institution may depend, in part, upon her specific thinking style preference.

## Implications of the Study

There are numerous implications for thinking style research. Of particular interest to this study are implications that would serve to improve higher education administration. These include improving organizational leadership and improving organizational communication. Within these two specific implications,

an expanded knowledge and understanding of thinking styles may allow female college and university presidents to provide opportunities for personal, professional, and organizational growth, for self and others. In addition, such knowledge may provide recruitment and diversification assistance when individuals or committees consider a variety of different individuals for a very specific presidential role.

### *Effective Organizational Leadership*

There may be numerous practical and theoretical implications for knowing, recognizing, and understanding the preferred thinking styles of female college and university presidents. The possibility may exist that such recognition may assist the president in forming groups of constituents with differing styles to consider tasks and issues more comprehensively, and from a greater variety of viewpoints. Understanding one's individual thinking style preference may increase the opportunities for considering thinking style in various situations and in adapting one's own style according to various situations or in light of differing styles of others in close work proximity. Being able to understand, recognize, and adapt thinking styles may increase one's personal and professional value within the college or university, as this person may be able to more effectively work within such a diverse environment.

A strong implication of thinking style research lies in its connection to leadership. Specific to this study was the theoretical construct of Contingency Leadership Theory. Colleges and universities vary in size, structure, technology, and the requirements of the particular environment. Ultimately, the institution's

distinct goals and mission, as well as the individual leadership style of the president, give definition to the institution's organizational structure.

This study emphasized the Contingency Leadership Theory that was first proposed by Fiedler (1967), which emphasizes the leader's personality and the situations in which the leader operates. As noted previously, connections have been established between personality and thinking style, as personality style served as one of the theoretical constructs utilized in the development of the InQ. Fiedler's model indicated that the effectiveness of the leader depends upon both the characteristics of the leader and the favorableness of the situation. Although the characteristics of the leader cannot be easily manipulated, a thorough understanding of thinking styles, and knowledge of the imperative role they play within the leadership culture of particular colleges and universities can enhance the favorableness of the situation. The effectiveness of a female college or university president may depend, in part, upon her specific thinking style preference, and how she chooses to operate in an environment that is undoubtedly comprised of individuals with various thinking style preferences.

### *Improving Organizational Communication*

In addition to improving higher education administration via the ability to understand co-workers through knowledge of thinking styles, the possibility exists for improving organizational communication. Differences in expressed thinking style may be interpreted as blocks to effective communication. If individuals within the higher education context were to thoroughly examine thinking styles, and develop an understanding of the many characteristic traits that are often

expressed in verbal and non-verbal communication, then the possibility exists that an increase in such knowledge would provide a means to promote more effective internal communication. It is the belief that more effective internal communication within colleges and universities may result in more effective external action.

### *Knowledge of and Use of Thinking Style Profiles*

This study has allowed for the development of a very specific profile, a profile that may be of great interest to females who pursue college or university presidencies. The implication is that these women now have a profile of detailed information on which to base their own experiences, and from which to form their own guides or timelines. For the first time, females have a full description or profile devoted to thinking styles and other variables dealing with female college and university presidents. Women with higher administrative potential and desire can utilize this profile, and compare it to their own professional experiences and desires as they engage in the pursuits and transitions to these chief executive roles. In addition, they now have a solid data-based body of knowledge to look at concerning many variables and facets related to female college and university presidents. They can make their own comparisons to these current presidents in order to determine where they are in their own professional pursuits, and in what areas they need to focus or increase awareness.

## Recommendations for Future Research

The first recommendation for future thinking style research using the InQ would be to conduct a similar study utilizing male college and university

presidents as the population. This would provide a foundation for which to provide comparative analysis, and would allow for additional research concerning sex influence on thinking styles to be conducted.

It may be valuable for future studies to include comparative studies, such as female college and university presidents and other administrators within the institutions they serve. Future studies may compare college women and college men, specifically as related to this particular study, comparing female and male college and university presidents.

This present study did provide for the collection of data regarding specific area of academic background/specialty. A comparative study with regard to thinking style might provide additional information that would support thinking style considerations in career selection.

As previously mentioned, MANOVA tests indicated significance between thinking style in general, as compared to Carnegie classification. ANOVA tests for each thinking style tested separately indicated significance for only the Pragmatist and Realist styles. This finding was intriguing to the researcher, considering that such a vast majority of presidents had highest scores in the Analyst and Idealist styles. More in-depth research into these phenomena may better explain these findings.

This study indicated that there was a significant difference between institutional control and thinking style of female college and university presidents based on MANOVA testing. When thinking styles were tested individually, significance was noted only for the Realist and Synthesist styles. Additional

research is needed to further explore this aspect of thinking styles as related to female college and university presidents.

The difference between primary area of academic background/specialty and thinking style is another area on which to focus additional study. Additional work entailing these differences in female college and university presidents would allow for an expansion of demographic and thinking style profiles of this selected population, and would provide additional information regarding the link between thinking style and both academic interest and chosen career.

The age of the female president had a significant difference to thinking style of the participants in this study. More in-depth research is necessitated in order to determine what age categories hold specific significance to each individual thinking style.

The results from this study indicated significance between years of presidential experience and thinking style preference. One question raised from this general finding is in determining at what particular experience level one is likely to see a particular type of thinker in this presidential role. Additional study that concentrates on the specifics of years of experience and the relationship to thinking style would allow this question to be answered, as well as enrich the thinking style profile of female college and university presidents.

Connections between institutional control and thinking style of female college and university presidents may lead to a more in-depth understanding of the role thinking styles play in various facets of presidential leadership. In this current study, flat thinking tendencies were found in female presidents at private

institutions. Further study may better explain this finding, and more in-depth analysis may provide valuable data regarding this and other institutional control structures with regard to thinking style.

A final recommendation is to replicate this study with female leaders in other organizational settings, such as in the business and industry milieu. The purpose of these studies would be to determine whether thinking style preference is similar to those seen in female leaders of colleges and universities. This may strengthen the knowledge base associated with the leadership and thinking styles of females who hold executive-level leadership roles.

Other factors to consider in conducting additional studies would be the inclusion of a deeper analysis of ancillary statistical findings, such as differences between particular fields of study and thinking style preference. In addition, future researchers might consider the addition of other pertinent variables, such as geographic location, in conducting a similar study.

## Chapter Summary

Chapter V provided a summary of the research study. Information concerning the purpose and design of the study were presented, along with demographic information on the study's participants. Procedures incorporated in carrying out the study were then reviewed. Next, research questions were restated, with a summary of the primary results. Following was a summary and discussion of findings from the study. A total of 11 primary conclusions were then offered, as well as information regarding implications of this study to the practice of educational leadership, specifically, female college and university presidency.

Finally, several recommendations for future research pertaining to thinking styles of female college and university presidents and other executive females were offered.

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# APPENDICES

**Appendix A: Inquiry Mode Questionnaire (InQ)**

**Appendix B: Institutions included in study**

**Appendix C: Cover letter requesting participation in the study**

**Appendix D: Consent form**

**Appendix E: Demographic data form**

**Appendix F: IRB approval letter**

**Appendix G: Thank-you letter**

**Appendix H: Letter requesting permission to use InQ**

**Appendix I: Approval to Use InQ**

# APPENDIX A: INQUIRY MODE QUESTIONNAIRE (InQ)


InQ Your Thinking Profile©

# INQUIRY MODE QUESTIONNAIRE
## A Measure of How You Think and Make Decisions

By Allen F. Harrison, D.P.A., Robert M. Bramson, PhD.,
Susan Bramson & Nicholas Parlette M.P.H.

## DIRECTIONS

This questionnaire has no right or wrong answers. It is a tool which can help you identify your preferred modes of thinking, asking questions, and making decisions. To be of maximum value to you, it is important that you respond as accurately as possible in terms of the way you believe you actually behave, not as you think you should.

Each item in this questionnaire is made up of a statement followed by five possible endings. Indicate the order in which you believe each ending applies to you. In the blank box to the left of each ending, fill in the number 5, 4, 3, 2, or 1, indicating the degree to which an ending is most like you (5) or least like you (1). Do not use any number more than once for any group of five endings. Even if two or more endings seem equally like you, rank them anyway. Each ending must be ranked, 5, 4, 3, 2, or 1. **Remember 5 is most like you, 1 is least like you.**

### EXAMPLE

Please fill in this example:
WHEN I READ A REPORT, I AM MOST LIKELY TO PAY ATTENTION TO:

- ☐ 1. The quality of the writing
- ☐ 2. The main ideas in the report
- ☐ 3. The table of contents
- ☐ 4. The back-up materials and tables
- ☐ 5. The finding and recommendations

5 = MOST LIKE YOU 1 = LEAST LIKE YOU

Once you are sure you understand the directions given above, please turn the page and proceed.



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PAGE ONE 5 = MOST LIKE YOU 1 = LEAST LIKE YOU

A: WHEN I HEAR PEOPLE ARGUE OVER AN IDEA, I TEND TO FAVOR THE SIDE THAT:

1. Identifies and tries to bring out the conflict
2. Best expresses the values and ideals involved
3. Best reflects my personal opinions and experience
4. Approaches the situation with the most logic and consistency
5. Expresses the argument most forcefully and concisely

B: WHEN I BEGIN WORK ON A GROUP PROJECT, WHAT IS MOST IMPORTANT TO ME IS:

1. Understanding the purposes and value of the project
2. Discovering the goals and values of individuals in the group
3. Determining the steps to be taken to get the project done efficiently
4. Understanding how the project will pay off for myself and others
5. Getting the project organized and under way

C: GENERALLY SPEAKING, I ABSORB NEW IDEAS BEST BY:

1. Relating them to current or future activities
2. Applying them to concrete situations
3. Concentration and careful analysis
4. Understanding how they are similar to familiar ideas
5. Contrasting them to other ideas

D: FOR ME, THE BACK-UP DATA IN A BOOK OR REPORT ARE USUALLY:

1. Very important if they demonstrate the truth of the findings
2. Important only for checking on the accuracy of the facts that are cited
3. Useful, if supported and explained by the narrative
4. Important only in terms of the conclusions to be drawn from them
5. No more and no less important than the narrative

E: IF I WERE PUT IN CHARGE OF A PROJECT, I WOULD PROBABLY START BY:

1. Trying to fit the project into broad perspective
2. Deciding how to get it done with the available time and money
3. Speculating about what the possible outcomes might be
4. Determining whether or not the project should be done at all
5. Trying to formulate the problem as thoroughly as possible

F: IF I WERE ASKED TO GATHER INFORMATION FROM PEOPLE, I WOULD PREFER TO:

1. Form my own opinion on the facts and issues and then ask specific questions
2. Hold an open meeting and ask them to air their views
3. Interview them in small groups and ask general questions
4. Meet informally with key people to get their ideas
5. Ask them to give me their information in writing

PAGE TWO 5 = MOST LIKE YOU 1 = LEAST LIKE YOU

G: I AM LIKELY TO BELIEVE THAT SOMETHING IS TRUE IF IT:

1. Has held up against opposition
2. Fits in well with other things that I hold to be true
3. Has been shown to hold up in practice
4. Make sense logically and scientifically
5. Can be personally verified by observable facts

H: I CAN CONTRIBUTE THE MOST WHEN I'M ASKED TO:

1. Identify the goals and objectives of a project
2. Identify priorities between competing projects
3. Identify how to save time and money on a project
4. Identify the practical effects of a project
5. Identify and assign the resources needed to carry out a project

I: WHEN I READ A NON-FICTION BOOK I PAY MOST ATTENTION TO:

1. The relation of the conclusions to my own experience
2. Whether or not the recommendations can be accomplished
3. The validity of the findings, backed up by data
4. The writer's understanding of goals and objectives
5. The inferences that are drawn from the data

J: WHEN I HAVE A JOB TO DO, THE FIRST THING I WANT TO KNOW IS:

1. What the best method is for getting the job done
2. Who wants the job done and when
3. Why the job is worth doing
4. What effect it may have on other jobs that have to be done
5. What the immediate benefit is for doing the job

K: I USUALLY LEARN THE MOST ABOUT HOW TO DO SOMETHING NEW BY:

1. Understanding how it is related to other things I know
2. Starting in to practice it as soon as possible
3. Listening to differing views about how it is done
4. Having someone show me how to do it
5. Analyzing how to do it in the best way

L: IF I WERE TO BE TESTED, I WOULD PREFER:

1. An objective, problem-oriented set of questions on the subject
2. A debate with others who are also being tested
3. An oral presentation covering what I know
4. An informal report on how I have applied what I have learned
5. A written report covering background, theory and method

PAGE THREE 5 = MOST LIKE YOU 1 = LEAST LIKE YOU

**M: PEOPLE WHOSE ABILITIES I RESPECT THE MOST ARE LIKELY TO BE:**

1. Philosophers and consultants
2. Writers and teachers
3. Business and government leaders
4. Economists and engineers
5. Entrepreneurs and journalists

**N: GENERALLY SPEAKING, I FIND AN IDEA USEFUL IF IT:**

1. Fits in well with ideas that I have learned
2. Explains things to me in a new way
3. Can systematically explain a number of related situations
4. Serves to clarify my own experience and observations
5. Has a practical and concrete application

**O: WHEN SOMEONE MAKES A RECOMMENDATION, I PREFER THAT HE OR SHE:**

1. Show clearly what benefits will be realized
2. Show how the recommendation can be implemented
3. Back up the recommendation with data and a plan
4. Show how the recommendation will support overall goals
5. Take into account the drawbacks as well as the benefits

**P: I WOULD MOST LIKELY READ A BOOK ON AN UNFAMILIAR TOPIC BECAUSE OF:**

1. An interest in improving my technical knowledge
2. Having been told it would be useful by someone I respect
3. A desire to know more about how others think
4. A desire to find ideas that would challenge me
5. A wish to learn if the specific subject could benefit me

**Q: WHEN I FIRST APPROACH A PROBLEM, I AM MOST LIKELY TO:**

1. Try to relate it to a broader problem or theory
2. Look for ways to get the problem solved quickly
3. Think of a number of opposing ways to solve it
4. Look for ways that others might have solved it
5. Try to find the best procedure for solving it

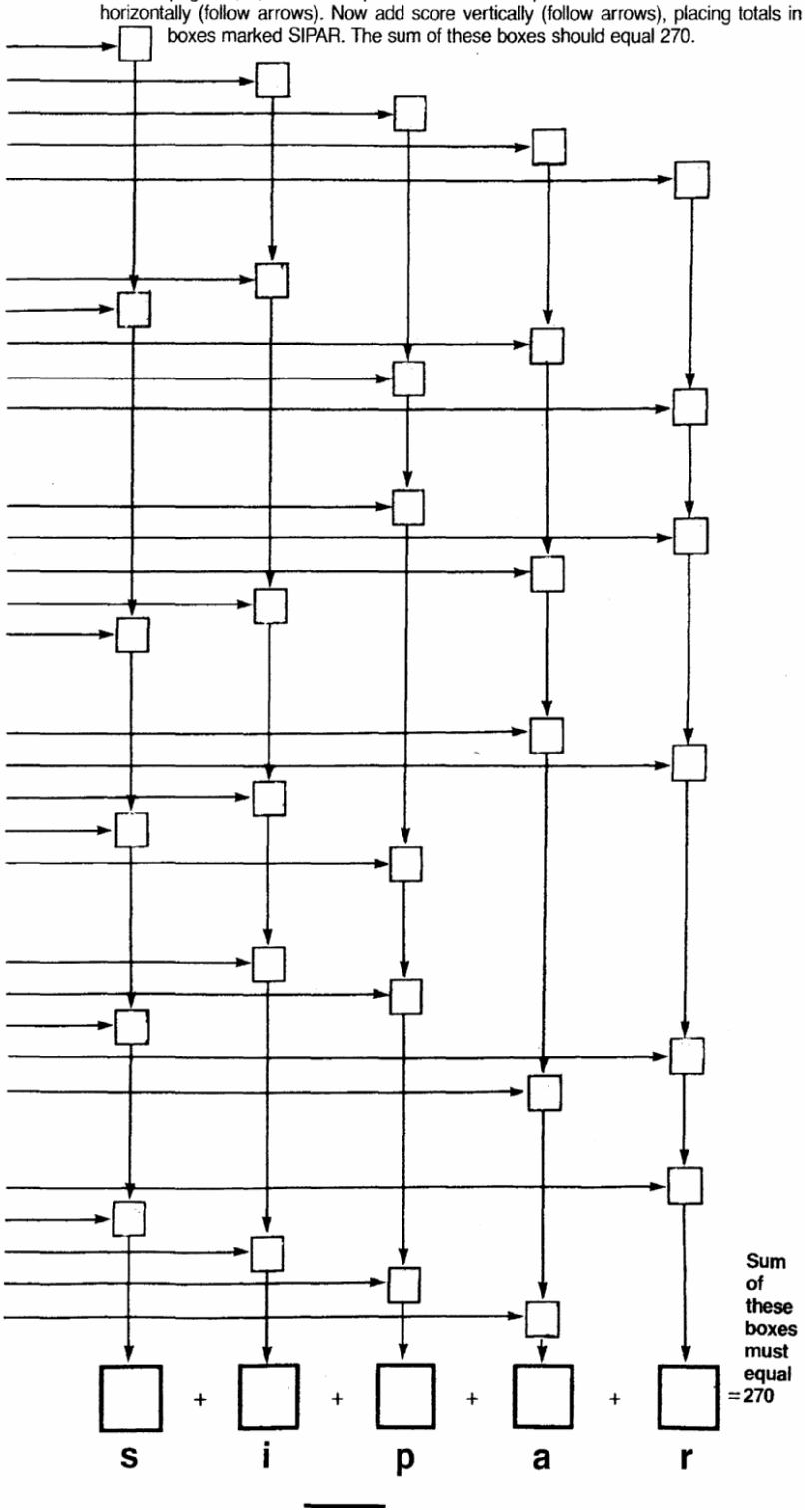
**R: GENERALLY SPEAKING, I AM MOST INCLINED TO:**

1. Find existing methods that work, and use them as well as possible
2. Speculate about how dissimilar methods might work together
3. Strive for quality regardless of the cost
4. Look for new ways to do things
5. Be dissatisfied until I've found the best method

*Tear off pages 1, 2 & 3 at the perforation line to expose the score boxes*

**SCORING INSTRUCTIONS**

Tear off pages 1, 2, & 3 at the perforation line to expose score boxes. Add numbers horizontally (follow arrows). Now add score vertically (follow arrows), placing totals in boxes marked SIPAR. The sum of these boxes should equal 270.



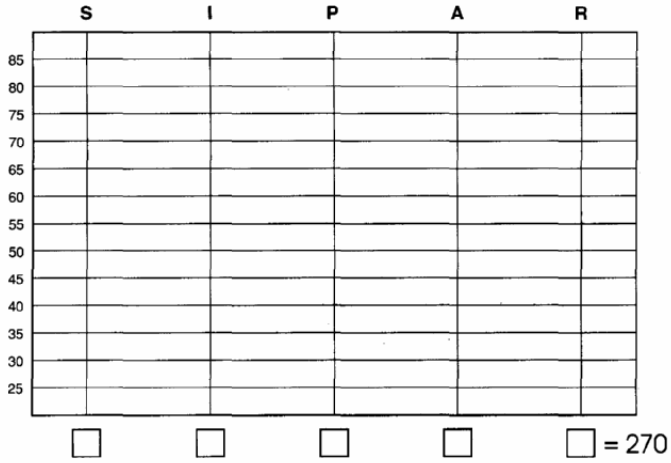
# Summary Chart, Styles of Thinking

| | I<br>SYNTHESIST | II<br>IDEALIST | III<br>PRAGMATIST | IV<br>ANALYST | V<br>REALIST |
|---|---|---|---|---|---|
| ORIENTATION | | | | | |
| **Characteristics** | Integrative view.<br>Seeks conflict and synthesis.<br><br>Interested in change.<br><br>Speculative. | Holistic view.<br>Seeks ideal solutions.<br><br>Interested in values.<br><br>Receptive. | Eclectic view.<br>Seeks shortest route to payoff.<br><br>Interested in innovation.<br>Adaptive. | Deductive view.<br>Seeks "one best way."<br><br>Interested in "scientific solutions."<br>Prescriptive. | Empirical view.<br>Seeks solutions that meet current needs.<br>Interested in concrete results<br>Corrective. |
| **Strengths** | Focus on underlying assumptions.<br>Points out abstract conceptual aspects.<br>Good at preventing over-agreement.<br><br>Best in controversial situations.<br>Provides debate and creativity. | Focus on process and relationships.<br>Points out values and aspirations.<br>Good at articulating goals.<br><br>Best in value-laden situations.<br>Provides broad view, goals, standards. | Focus on payoff.<br><br>Points out tactics and strategies.<br>Good at identifying impacts.<br><br>Best in complex situations.<br>Provides experiment and innovation. | Focus on method and plan.<br>Points out data and details.<br>Good at model building and planning.<br>Best in structured situations.<br>Provides stability and structure. | Focus on facts and results.<br>Points out realities and resources.<br>Good at simplifying, "cutting-through."<br><br>Best in well-defined situations.<br>Provides drive and momentum. |
| **Liabilities** | May screen out agreement.<br>May seek conflict unnecessarily.<br><br>May try too hard for change, newness.<br>May theorize excessively.<br>Can appear uncommitted. | May screen out "hard" data.<br>May delay from too many choices.<br><br>May try too hard for "perfect" solutions.<br>May overlook details.<br>Can appear overly sentimental. | May screen out long-range aspects.<br>May rush too quickly to payoff.<br><br>May try too hard for expediency.<br>May rely too much on what "sells."<br>Can appear over-compromising. | May screen out values<br>May over-plan, over-analyze.<br><br>May try too hard for predictability.<br>May be inflexible, overly cautious.<br>Can appear "tunnel visioned." | May screen out disagreement.<br>May rush to over-simplified solutions.<br>May try too hard for consensus.<br>May over-emphasize perceived "facts."<br>Can appear too results-oriented. |
| BEHAVIORAL CUES | | | | | |
| Apt to appear | Challenging, skeptical, amused. | Attentive, receptive, supportive. | Open, sociable, humorous. | Cool, studious, hard to read. | Direct, forceful; quick nonverbal expression. |
| Apt to say | On the other hand...<br>No, not necessarily... | It seems to me....<br>Don't you think.... | I'll buy that...<br>That's one sure way... | It stands to reason...<br>Logically... | It's obvious to me...<br>Everybody knows that... |
| Apt to express | Concepts, opposite points of view. | Feelings, ideas about values, what's good. | Non-complex ideas, personal anecdotes. | General rules; supporting data. | Opinions, factual anecdotes. |
| Tone | May sound argumentative, sardonic. | May sound tentative, hopeful, resentful. | May sound insincere, enthusiastic. | May sound stubborn, careful, dry. | May sound dogmatic, forthright, positive. |
| Enjoys | Intellectual, philosophical, arguments. | Feeling-level discussions. | Brainstorming, lively give-and-take. | Rational examination of issues. | Short, direct, factual discussions. |
| Apt to use | Parenthetical expressions, qualifying phrases, adjectives. | Indirect questions, aids to agreement. | Case examples, illustrations, popular opinions. | Long, discursive, well-formulated sentences. | Direct, pithy, descriptive statements. |
| Dislikes | Talk that seems simplistic, superficial, mundane. | Talk that seems too factual, too conflictive, dehumanizing. | Talk that seems dry, dull, humorless, "nit-picking." | Talk that seems irrational, aimless, "far-out." | Talk that seems too theoretical, sentimental, impractical. |
| Under stress | Pokes fun. | Looks hurt. | Looks bored. | Withdraws. | Becomes agitated. |

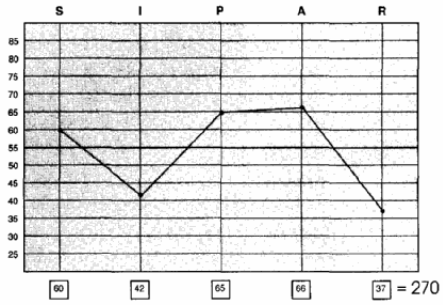
## Interpreting your scores

### Line Graph

Enter your numerical score for each Style with a dot at the appropriate place on the vertical line.
Connect the dots to form a line graph (see example).




Example




### Scores, and what they mean

(Remember, there are no right or wrong styles. It is a matter of experience and preference.)

1. If you scored
   - 72 or higher — this style dominates your approach to thinking.
   - 66 to 71 — you have a strong preference for the style.
   - 60 to 65 — you have a moderate preference for the style.
   - 49 to 59 — neutral—no preference for, or disinclination against, the style.
   - 41 to 48 — you have a moderate disinclination to use the style.
   - 37 to 42 — you have a strong disinclination to use the style.
   - 0 to 36 — you have a predisposition against the use of the style.

2. High scores (60 or above) show where your preferences lie. They identify the thinking strategies you have learned, over time, and which you prefer to use because they work well for you. The higher the score, the stronger the preference.

3. Low scores (48 or below) identify your areas of strategic thinking that are under-used or under-developed. The lower the score, the greater the tendency not, or disinclination, to use this style.

4. Combinations. Although half of individuals score 60-or-above in just one style, a few score 60-or-above in two, or even three, styles.

5. If the difference between any two of your scores is less than 4, regard the styles as being somewhat equal — the difference is too small to attribute any significance to it.

## Understanding your Style

### Summary description of the five styles

#### Synthesist

Synthesists tend to be challenging people — curious, restless, and creative. They are motivated to understand, but not necessarily control, the world, and are much concerned that others see them as competent and worthy of admiration. They can be negative and disruptive, argumentative and rambling, as they try to integrate different perspectives.

#### Idealist

Idealists tend to expect much of themselves and of others. At the same time, their deeply felt needs to be helpful to others, to be appreciated, and to be found worthy of trust make idealists frequently very supportive and helpful to others. They can be so helpful that, occasionally, they are just plain meddlesome.

#### Pragmatist

Pragmatists are likely to be good at knowing what people will "buy." They can afford to approach problems in innovative or compromising ways because they have no vested interests in particularly theories or methods. They provide optimism and enthusiasm that motivates people to move ahead even when the task seems mountainous. Because they don't need to take on the whole world at once, Pragmatists often have a high tolerance for ambiguity. They need less structure and predictability than the rest of us.

#### Analyst

Analysts view the world on an assumption that it is basically orderly, logical, and rational. If it isn't, it should be, and Analysts will do their best to make it so. Within this world, they have a need to feel competent and self-sustaining. Analysts believe that "so long as we proceed carefully and methodically, things will work out." They are interested, above all else, in finding the correct method for getting something done. Analysts are apt to look for (or already "know") the "one best way" to solve a problem.

#### Realist

Realists tend to view the world empirically — whatever can be seen, felt, heard, smelled, and experienced is vividly real. Anything else is somewhat fanciful, theoretical, and not very compelling. Realists assume the world is as they sense it, the facts are there for everyone to see, and any two *intelligent* people can't help but agree on these facts. In that respect, Realists are quite the opposite of Synthesists. They are bothered by compromise, synthesis, analysis, and idealism. They want to achieve concrete results — nothing else can influence the course of that "real world."

### Combinations of styles

Our research show that about 35% of people show a preference for using two or more thinking styles in combinations — not as a *blend* but rather using one or another style in combinations, for whatever reasons. The three most-common combinations are:

*Idealist-Analyst*
*Analyst-Realist*
*Synthesist-Idealist*

The least-common are the *Synthesist* in combination with either the *Pragmatist*, *Analyst*, or *Realist*.

What is important to remember is that all combinations can create some element of internal conflict, within the person, when the contrasting values are brought together, and all can be of great value when the complementary values are emphasized.

*Three-way* thinkers are likely to behave more situationally, since they employ a greater range of strategies.

*Level-profiles*, in which all scores fall between 49 and 59, tend to be less predictable than others. They tend to look at things differently, depending on the situation.

## APPENDIX B: INSTITUTIONS INCLUDED IN THE STUDY

## Institutions Included in the Study

Academy College
Agnes Scott College
AIB College of Business
Aiken Technical College
Aims Community College
Albany State University
Albertus Mangus College
Alfred State College – SUNY
Allan Hancock College
Allentown Business School
Alma College
Alverno College
American Academy McAllister Institute of Funeral Service
Anne Arundel Community College
Antioch University – Seattle
Antioch University McGregor
Antioch University Santa Barbara
Antonelli College
Art Institute of Atlanta
Art Institute of Cincinnati
Asnuntuck Community College
Assumption College for Sisters
Athens Technical College
Auburn University – Montgomery
Aurora University
Austin Peay State University
Baker College of Flint
Baker College of Owosso
Ball State University
Baptist Memorial College of Health Sciences
Barnard College
Barry University
Bates College
Bauder College
Bay Path College
Beacon College
Beal College
Bellevue Community College
Bennett College
Bennington College
Bergen Community College
Berkeley College
Bernard M. Baruch College - CUNY
Bethune-Cookman College
Bishop State Community College
Bismarck State College
Blackburn College
Bloomsburg University of Pennsylvania
Blue Mountain College
Brazosport College
Brescia University
Briar Cliff University
Bronx Community College - CUNY
Brookhaven College
Brown University
Bryn Mawr College
Buffalo State College – SUNY
Bunker Hill Community College
Burlington College
Business Institute of Pennsylvania
Butler Community College
Butler County Community College
Butte College
Cabarrus College of Health Sciences
Cabrini College
Calhoun Community College
California Design College
California State University, Hayward
California State University, Northridge
California State University, San Marcos
Cambria County Area Community College
Camden County College
Cameron College
Cameron University
Canada College
Cape Cod Community College
Cardinal Stritch University
Carlow College
Carolinas College of Health Sciences
Carroll Community College
Cedar Crest College
Cedar Valley College
Central Alabama Community College
Central Carolina Technical College
Central Community College
Central Methodist University
Central Ohio Technical College
Central Washington University
Central Wyoming College
Cerritos College
Cerro Coso Community College
Chaffey College
Chaminade University of Honolulu
Chandler-Gilbert Community College
Chatfield College
Chatham College
Chattahoochee Valley Community College
Chemeketa Community College
Chestnut Hill College
Chicago State University
City Colleges of Chicago, Harry S. Truman
City Colleges of Chicago, Malcom X
City Colleges of Chicago, Richard J. Daley
Claremont McKenna College

Clark State Community College
Clarke College
Clinton Community College
Clover Park Technical College
Clovis Community College
Coahoma Community College
Cochise College
Colby-Sawyer College
Colgate University
College of Alameda
College of Lake County
College of Mount St. Joseph
College of New Jersey
College of Notre Dame of Maryland
College of Saint Benedict
College of Saint Elizabeth
College of Saint Mary
College of San Mateo
College of Santa Fe
College of Southern Maryland
College of St. Catherine
College of Staten Island of the City University of New York
College of the Albermarle
College of the Canyons
College of the Desert
College of the Redwoods
CollegeAmerica – Denver
Concordia College
Contra Costa College
Converse College
Costal Georgia Community College
Cottey College
Crafton Hills College
Cuesta College
Cuyahoga Community College
Cuyamaca College
Cypress College
Daniel Webster College
Danville Area Community College
Davidson County Community College
Dean College
DeKalb Technical College
Denmark Technical College
DeVry University
Dillard University
Dominican College of Blauvelt
Dominical University
DuBois Business College
Dyersburg State Community College
East Central College
Eastern Kentucky University
Eastern Maine Community College
Eastern New Mexico University – Roswell
ECPI Technical College
Elizabethtown Community & Technical College
Emerson College
Emmanuel College
Emporia State University
Everest College
Fashion Careers of California
Fashion Institute of Design and Merchandising
Fashion Institute of Technology
Fayetteville State University
Feather River Community College District
Felician College
Ferrum College
Fisk University
Flathead Valley Community College
Florida Metropolitan University – Lakeland
Florida Metropolitan University – South Orlando
Florida Metropolitan University – Tampa
Florida Southern College
Foothill College
Framingham State College
Frederick Community College
Frostburg State University
Gadsden State Community College
Gainesville College
Galveston College
Garden City Community College
Gaston College
Gateway Community College
George C. Wallace Community College – Dothan
Georgia College & State University
Georgia Perimeter College
Georgian Court University
Gettysburg College
Gibbs College
Golden West College
Golf Academy of the Carolinas
Goshen College
Graduate School and University Center - CUNY
Gupton-Jones College of Funeral Service
Gwinnett Technical College
Gwynedd-Mercy College
Hamilton College
Harford Community College
Harrisburg Area Community College
Hawaii Business College
Hawaii Community College
Hawkeye Community College
Helene Fuld College of Nursing of North General Hospital
Hennepin Technical College
Heritage College
Highline Community College
Hilbert College
Hill College
Hillsborough Community College
Holy Family University

Holy Names University
Hopkinsville Community College
Hostos Community College – CUNY
Housatonic Community College
Howard College
Howard Community College
Hunter College - CUNY
Illinois Valley Community College
Immaculata University
Independence Community College
Indiana University Kokomo
Indiana University South Bend
Indiana University Southeast
Inver Hills Community College
Ithaca College
Ivy Tech State College – Central Indiana
Ivy Tech State College – Lafayette
Ivy Tech State College – North Central
J.F. Drake State Technical College
James Sprunt Community College
Jarvis Christian College
Jefferson Community College
Jefferson Davis Community College
Jefferson State Community College
Johnson & Wales University
Johnson C. Smith University
Johnson College
Johnson State College
Kalamazoo Valley Community College
Katharine Gibbs School
Kauai Community College
KD Studio – Actors Conservatory
Kennebec Valley Community College
Kennesaw State University
Kent State University
Kentucky State University
Kentucky Weslyan College
Kenyon College
Kingsboro Community College
Kingwood College
La Guardia Community College
La Roche College
Lake Region State College
Lake Superior College
Lake Superior State University
Lamar Community College
Landmark College
Lane Community College
Lansing Community College
Las Positas College
Las Vegas College
Lawrence University
Lee College
Lesley University
Lester L. Cox College of Nursing and Health Sciences
Lewis College of Business
Lexington College
Lincoln Memorial University
Lincoln University
Linfield College
Linn-Benton Community College
Livingstone College
Loma Linda University
Long Beach City College
Longwood University
Los Angeles City College
Los Angeles County College of Nursing and Allied Health
Los Angeles Harbor College
Los Angeles Mission College
Los Angeles Southwest College
Luzerne County Community College
Lyndon State College
Madisonville Community and Technical College
Madonna University
Maharishi University of Management
Manatee Community College
Manor College
Maple Woods Community College
Maria College of Albany
Marian Court College
Marietta College
Marlboro College
Martin Community College
Mary Baldwin College
Marygrove College
Marylhurst University
Marywood University
Massachusetts College of Liberal Arts
Maysville Community & Technical College
Mayville State University
McDaniel College
Medvance Institute
Mendocino College
Mercy College
Meredith College
Merritt College
Mesabi Range Community and Technical College
Messiah College
Miami-Jacobs College
Middlesex Community College
Mildred Elley
Millersville University of Pennsylvania
Mills College
Mira Costa College
Mississippi University for Women
Mitchell College
Moberly Area Community College
Montclair State University
Montgomery College
Montgomery Community College

Montgomery County Community College
Moorpark College
Moraine Park Technical College
Morgan Community College
Mount Aloysius College
Mount Holyoke College
Mount Ida College
Mount Mary College
Mount Saint Mary College
Mount St. Mary's College
Muskingum College
Nash Community College
Nebraska Wesleyan University
Neosho County Community College
Neumann College
New Hampshire Community Technical College, Berlin/Laconia
New Hampshire Community Technical College, Nashua/Claremont
New Hampshire Technical Institute
New York College of Health Professions
Norfolk State University
Normandale Community College
North Country Community College
North Dakota State College of Science
North Hennepin Community College
North Lake College
Northeast Iowa Community College
Northland College
NorthWest Arkansas Community College
Northwest State Community College
Northwest Vista College
Northwestern Connecticut Community College
Nossi College of Art
Oakland Community College
Oakton Community College
Oberlin College
Old Dominion University
Olive-Harvey College
Onondaga Community College
Orangeburg-Calhoun Technical College
Our Lady of Holy Cross College
Our Lady of the Lake University
Owens Community College
Owensboro Community and Technical College
Oxnard College
Pace Institute
Paine College
Palo Alto College
Paradise Valley Community College
Paris Junior College
Park University
Parkland College
Parks College
Patricia Stevens College
Peace College
Penn State Harrisburg
Penn Valley Community College
Pennsylvania College of Art & Design
Pennsylvania College of Technology
Pennsylvania Highlands Community College
Phillips Beth Israel School of Nursing
Phoenix College
Pine Manor College
Pittsburgh Technical Institute
Pitzer College
Platt College, Cerritos
Platt College, Newport Beach
Potomac College
Prince Institute of Professional Studies
Prince William Sound Community College
Princeton University
Queen of the Holy Rosary College
Queens University of Charlotte
Quincy University
Quinebaug Valley Community College
Quinsigamond Community College
Randolph-Macon Woman's College
Regis College
Remington College – Baton Rouge Campus
Remington College – Lafayette Campus
Remington College – Memphis Campus
Remington College – Mobile Campus
Rensselaer Polytechnic Institute
Rich Mountain Community College
Richland Community College
Richmond Community College
Rio Hondo College
Rio Salado College
Roanoke-Chowan Community College
Rockford Business College
Rosemont College
Saint Joseph College
Saint Mary-of-the-Woods College
Saint Mary's College
Saint Xavier University
Salem College
Salem State College
Salisbury University
Salve Regina University
San Bernardino Valley College
San Diego Mesa College
San Jacinto College South
San Juan College
Sanford-Brown College
Santa Ana College
Sarah Lawrence College
Scottsdale Culinary Institute
Scripps College
Seattle Central Community College

Seminole Community College
Seton Hill University
Shasta College
Shawnee State University
Shoreline Community college
Skyline College
Smith College
Solano Community College
Somerset Community College
South Arkansas Community College
South Dakota State University
South Seattle Community College
South Texas Community College
South University
Southeastern Business College
Southeastern University
Southern Connecticut State University
Southern Oregon University
Southern Union State Community College
Southern Vermont College
Southern West Virginia Community and Technical College
Southwest Georgia Technical College
Southwest Wisconsin Technical College
Southwestern College
Southwestern Community College
Spalding University
Spelman College
Spring Arbor University
St. Augustine College
St. Bonaventure University
St. Clair Community College
St. Cloud Technical College
St. John Fisher College
St. Joseph's College, New York
St. Louis Community College at Florissant Valley
St. Mary's College of Maryland
St. Philip's College
St. Thomas Aquinas College
St. Vincent's College
State Fair Community College
State University of New York at Binghamton
State University of New York at Oswego
Stephens College
Stevens-Henager College
Stony Brook University – SUNY
Suffolk County Community College
Sullivan County Community College
SUNY – Delhi
Sweet Briar College
University of New England
University of New Hampshire
University of Northern Colorado
University of Pennsylvania
Syracuse University
Tacoma Community College
Taylor Business Institute
TCI – The College of Technology
Technical College of the Lowcountry
Terra State Community College
Texas Southern University
Texas State University – San Marcos
Texas Woman's University
The Art Center Design College
The Art Institute of Phoenix
The Art Institute of Seattle
The College of Westchester
The Ohio State University
The Refrigeration School
The Sage Colleges
The University of Alabama at Birmingham
The University of Memphis
The University of North Carolina at Greensboro
The University of North Carolina at Wilmington
The University of Texas at Brownsville
The University of Texas at El Paso
Thomas More College
Three Rivers Community College
Tidewater Community College
Tomball College
Tougaloo College
Trident Technical College
Trinity College
Triton College
Troy State University, Dothan
Truman State University
Tunxis Community College
University of New Hampshire at Manchester
University of Alaska, Anchorage
University of California, Riverside
University of California, San Diego
University of Cincinnati
University of Colorado at Colorado Springs
University of Hawaii at Hilo
University of Hawaii West Oahu
University of Illinois at Chicago
University of Maine at Farmington
University of Maine at Machias
University of Maryland Eastern Shore
University of Massachusetts Dartmouth
University of Miami
University of Michigan – Ann Arbor
University of Minnesota – Duluth
University of Missouri – Kansas City
University of Nebraska at Omaha
University of Nevada – Las Vegas
University of Saint Francis
University of Saint Mary
University of San Diego
University of South Carolina – Beaufort

University of South Florida
University of Wisconsin – Stevens Point
Urban College of Boston
Ursuline College
Valley City State University
Vassar College
Vermilion Community College
Victor Valley College
Villa Maria College of Buffalo
Virginia Union University
Vista Community College
Walden University
Wallace State Community College
Washington State Community College
Waubonsee Community College
Waukesha County Technical College
Waycross College
Weber State University
Wellesley College
Wells College
Wesleyan College
West Central Technical College
West Chester University of Pennsylvania
West Kentucky Community and Technical College
West Virginia Junior College
West Virginia University at Parkersburg
Western Michigan University
Western Nevada Community College
Western Washington University
Westfield State College
Wharton County Junior College
Wheelock College
Whittier College
William Woods University
Wilmington College
Wilson College
Winward Community College
Wood Tobe-Coburn School
Worcester State College
Wyoming Technical Institute (Wyotech)
Wytheville Community College
Yakima Valley Community College
Yavapai College
York County Community College
Yuba College

## APPENDIX C: COVER LETTER

## COVER LETTER REQUESTING PARTICIPATION IN THE STUDY

MARSHALL UNIVERSITY
www.marshall.edu

**Graduate College**
School of Education & Professional Development
Department of Leadership Studies

May 8, 2006

Dear

My name is *Melanie S. Jones*. I am a doctoral candidate in Higher Education Administration in the Department of Leadership Studies at Marshall University Graduate College. Presently, I am engaged in my dissertation research and would appreciate your participation in completing the enclosed forms. As a female college or university President, Chancellor, or other Chief Executive Officer, you have been selected for data collection for my dissertation entitled ***"Thinking Style Differences of Female College and University Presidents: A National Study."***

This is a national study, and all female college and university presidents at institutions ranked Associate's or higher by the Carnegie Classification are invited to participate. You are one of 595 such female presidents receiving this survey, and your assistance and participation is crucial for the successful completion of my dissertation.

I would appreciate your completion of the enclosed Demographic Data Form and Inquiry Mode Questionnaire (InQ). The Demographic Data Form will provide me with information needed to answer the research questions associated with this study. The InQ is a copyrighted, 18-item, rank order, thinking style assessment inventory.

It is important that you **return the completed Demographic Data Form and InQ Questionnaire by *May 22, 2006*.** A stamped, self-addressed envelope is included for your convenience.

I will score all returned InQ surveys, and will analyze the Demographic Data and InQ profile scores for all participants. If you would like to receive a confidential interpretation of your InQ score, and/or receive an executive summary of my research findings, please enclose your contact information (a business card is ideal) with your completed survey materials.

I realize that you have a very demanding and time-consuming professional life, so I sincerely thank you for helping to make the completion of my doctoral program a reality.

*Best Regards,*

*Melanie S. Jones*
Doctoral Candidate

100 Angus E. Peyton Drive • South Charleston, WV 25303
A State University of West Virginia • An Affirmative Action/Equal Opportunity Employer

## APPENDIX D: CONSENT FORM

## CONSENT TO PARTICIPATE IN RESEARCH STUDY

**Anonymous Consent to Participate in a Research Study**

**Title of Study:** Thinking Style Differences of Female College and University Presidents: A National Study

*Dr. Michael W. Galbraith,* Principal Investigator
*Melanie S. Jones,* Co-investigator/doctoral candidate

*Introduction and Purpose of Study*
You are invited to participate in a research project. This purpose of the study is to identify the thinking style preferences of female college and university presidents at selected private and public institutions. In addition, analysis will be conducted in order to determine whether thinking style differences exist with regard to institutional Carnegie classification, institutional control, president's age, total years of presidential experience, and area of academic background/specialty.

*Researchers*
The study is being conducted by Dr. Michael W. Galbraith, Professor of Leadership Studies, and Melanie S. Jones, doctoral candidate in Leadership Studies: Higher Education Administration, at Marshall University Graduate College in South Charleston, WV. This research is being conducted as part of the dissertation requirements for Melanie S. Jones.

*Study Specifics*
This survey is comprised of the Inquiry Mode Questionnaire (InQ) and a demographic data form. It is anticipated that the length of time to complete both instruments is approximately 20 – 30 minutes. Your replies will be anonymous, so there is no need to identify yourself anywhere on the forms. You may choose to not answer any question or address any item on the InQ by simply leaving it blank. Participation is completely voluntary and if you choose to not participate in this survey, you may either return the blank survey or you may discard it. Because the InQ survey instruments are copyrighted, it would be greatly appreciated if you return the instrument, even if you choose not to participate.

*Consent to Participate*
Returning the completed survey and demographic data form in the enclosed self-addressed stamped envelope indicates your consent for use of the answers you supply.

*Confidentiality*
Although your responses are anonymous, we cannot guarantee absolute confidentiality. Federal laws states that we must keep study records private. Nevertheless, under unforeseen and rare circumstances, we may be required by law to allow certain agencies to review research records. Those agencies would include the Marshall University IRB, Office of Research Integrity (ORI) and the federal Office of human Research Protection (OHRP). This is to ensure that we are protecting your rights and your safety. If we publish the information we learn from this study, you will not be identified by name, via institution name, or in any other way.

*Contact Information*
If you have any questions about the study, you may contact Dr. Michael W. Galbraith at (304) 746-8952 or via e-mail at galbraith@marshall.edu. Melanie S. Jones may be reached at (304) 746-2077 x28 or via e-mail at melanie.jones@marshall.edu.

If you have any questions concerning your rights as a research participant you may contact the Marshall University Office of Research Integrity at (304) 696-7320.

By completing this survey and returning it you are also confirming that you are **18** years of age or older.

Please keep this page for your records.


MU IRB
MAR 2 4 2006
APPROVED

## APPENDIX E: DEMOGRAPHIC DATA FORM

## ***DEMOGRAPHIC DATA FORM***

*Please write your response on the line provided, or circle your response from those given.*

**1. What is your age? _____**

**2. Are you a female President, Chancellor, or other titled Chief Executive Officer at a college or university?**

a. YES b. NO

**3. How many academic years have you been employed as President, Chancellor, or other titled Chief Executive Officer at a college or university?** (Please include interim appointments, count partial years as one year, and include all institutions.) _____

**4. Highest degree held?**

a. Associate
b. Baccalaureate
c. Master's
d. Second Master's
e. Educational Specialist
f. Doctorate
g. Other (please specify): _____

**5. What is your primary area of academic background/specialty?**

a. Arts
b. Business
c. Education
d. Health Sciences
e. Humanities
f. Mathematics & Physical Sciences
g. Natural/Biological Sciences
h. Social Sciences
i. Other (please specify): _____

**6. At the beginning of the current academic year, what was the Carnegie Classification of your institution?**

a. Associate's
b. Baccalaureate/Associate's
c. Baccalaureate – General
d. Baccalaureate – Liberal Arts
e. Master's I
f. Master's II
g. Doctoral/Research – Extensive
h. Doctoral/Research – Intensive
i. Other (please list): _____

**7. What is the control structure of your institution?**

a. Federal
b. Independent
c. Independent – religious
d. Local
e. Private
f. Proprietary
g. State
h. State and local
i. State – related
j. Other (please specify): _____

## APPENDIX F: IRB APPROVAL

## APPROVED INSTITUTIONAL REVIEW BOARD APPLICATION

MARSHALL UNIVERSITY
www.marshall.edu

Office of Research Integrity
Institutional Review Board

Friday, March 24, 2006

Michael W. Galbraith, Ed.D.
Leadership Studies
100 Angus E. Peyton Drive
South Charleston, WV. 25303

RE: IRB Study # EX06-0111 **At:** Marshall IRB 2

Dear Dr. Galbraith:

**Protocol Title:**
Thinking Style Differences of Female College and University Presidents: A National Study

| | | |
|---|---|---|
| **Expiration Date:** | 3/23/2007 | |
| **Our Internal #:** | 2316 | |
| **Type of Change:** | (Other) | Exempted |
| **Expedited ?:** | ☐ | |
| **Date of Change:** | 3/24/2006 | |
| **Date Received:** | 3/24/2006 | |
| **On Meeting Date:** | | |
| **Description:** | In accordance with 45CFR46.101, the above listed study was granted exempted approval for a period of 12 months. This study is for student Melanie Jones. A progress report of this study is due prior to the anniversary date of March 23, 2007 or upon completion and or closure of the study if prior to the anniversary date.<br><br>The purpose of this anonymous survey study is to identify the thinking style preferences of female college and university presidents. | |

Respectfully yours,

Christopher W. LeGrow, Ph.D.
Marshall University IRB#2 Interim Chair

## APPENDIX G: THANK-YOU LETTER

## SAMPLE THANK YOU LETTER TO PARTICIPANTS

**Re: Thank you for participating in my dissertation research**

I successfully defended my dissertation, ***Thinking Style Differences of Female College and University Presidents: A National Study,*** on October 17, 2006. I wish to offer my sincerest appreciation to you for your participation. I realize how busy you are with your work and personal commitments, and I'm very glad that you were able to take the time to help me find success in this process.

Enclosed, you will find a summary of the research findings, along with your individual InQ scoring information and interpretation guide. If you would like additional information concerning thinking styles, or if I may provide you with access to the entire dissertation document, please contact me at your convenience.

Best regards,

***Melanie S. Jones***

Melanie S. Jones, Ed.D.
WV Prevention Resource Center – MUGC
100 Angus E. Peyton Drive
South Charleston, WV 25303
Office: (304)746-2077, ext.28
Cell: (740) 550-0077
melanie.jones@marshall.edu

## APPENDIX H: REQUEST TO USE InQ

## LETTER REQUESTING PERMISSION TO PURCHASE AND UTILIZE InQ

MARSHALL UNIVERSITY
www.marshall.edu

Graduate College
School of Education & Professional Development
Leadership Studies

I am requesting 1,000 InQ questionnaires for my dissertation research study.

The purpose of my study is to identify the thinking style preferences of female college and university presidents at selected private and public institutions. The study is designed to examine whether difference in thinking style preference exist with regard to selected Carnegie classifications, institutional control, president's age, years of employment of president, and area of academic specialty/background. This study will provide the first known national research on thinking styles of female college and university presidents.

**Researcher:** Melanie S. Jones

**Position:** doctoral candidate, Ed.D. program in Leadership Studies

**Affiliation:** Marshall University Graduate College, South Charleston, WV

**Title of Dissertation**: Thinking Style Differences of Female College and University Presidents: A National Study

I affirm that the InQ questionnaires will be used for the stated study. Due to the broad scope of the study, and the need for such a large quantity of the InQ instruments, I request a student discount

Melanie S. Jones — 3-16-06
Date

By signing below, I, Dr. Michael W. Galbraith, dissertation chairperson and advisor of Melanie S. Jones, affirm that the above stated information is correct.

Dr. Michael W. Galbraith — 3/16/06
Date

100 Angus E. Peyton Drive • South Charleston, West Virginia 25303-1600 • Tel 304/746-2514 • Fax 304/746-1942
A State University of West Virginia • An Affirmative Action/Equal Opportunity Employer

## APPENDIX I: APPROVAL TO USE InQ

From:  Carol Parlette [inq@pacbell.net]

Sent:  03/16/2006 11:50 AM

To: melanie.jones@marshall.edu

CC:

Subject: InQ

Thanks for the letter Melanie.  You do have permission to get the discount and to utilize the InQ for your research.

Good luck with your study.  Sounds interesting.  Will you be calling me with the credit card number? - Carol

--
Carol Holland Parlette, President
InQ Educational Materials, Inc.
640 Davis Street, Suite 28
San Francisco, CA  94111
800-338-2462  www.inq-hpa.com
email  inq@pacbell.net

*Curriculum Vitae*

***of***

# *Melanie S. Jones, Ed.D.*


*Employment Address:* *West Virginia Prevention Resource Center*
*Marshall University Graduate College*
*100 Angus E. Peyton Drive*
*South Charleston, WV 25303*

*Phone: (304) 746-2077 x28*
*Fax: (304) 746-6246*
*E-mail: melanie.jones@marshall.edu*

*Home Address:* *27 Private Drive 5904*
*Ironton, OH 45638*
*Phone: (740) 550-0077*


---

## *ACADEMIC BACKGROUND*

**Doctor of Education, Educational Leadership**
Major: Higher Education Administration, Cognate: College Teaching
Marshall University Graduate College, South Charleston, WV (October, 2006)

Dissertation: *Thinking Styles of Female College and University Presidents: A National Study*

**Master of Taxation (MST) Candidate**
Major: Federal Taxation
Washington School of Law, South Jordan, UT
Expected completion date: Spring 2007

**Master of Arts, Leadership Studies**
Major: Leadership Specialist
Marshall University Graduate College, South Charleston, WV (August, 2004)

**Bachelor of Science**
Major: Natural Science
Program emphases in Biology, Mathematics, Psychology & Geology
Shawnee State University, Portsmouth, OH (March, 2000)

**Associate of Science**
Major: Business
Program emphasis: Medical Assisting
Huntington Junior College, Huntington, WV (March, 1997)

## *HIGHER EDUCATION APPOINTMENTS*

**Evaluation Specialist,** March 2006 – present
West Virginia Prevention Resource Center
Marshall University Graduate College, South Charleston, WV
Duties and Responsibilities: quantitative research, evaluation, data analysis, data collection, program planning, development and delivery of training workshops, grant writing, grant management, report writing, technical assistance.

**Doctoral Graduate Teaching Assistant**, August 2004 – March 2006
Departments of Leadership Studies and Elementary & Secondary Education
Marshall University Graduate College, South Charleston, WV

**Intern,** January 2004 – May 2004
'Faces of Appalachia: Studies in Ethnicity and Gender'
A National Endowment for the Humanities Project
Marshall University, Huntington, WV

**Graduate Assistant**, August 2003 - July 2004
Department of Leadership Studies
Marshall University Graduate College, South Charleston, WV

**Adjunct Instructor**, June 2000 - May 2004
Department of Mathematics & Natural Science
Ashland Community & Technical College, Ashland, KY

**Tutor**, January 1998 - March 2000
Undergraduate Algebra, Biology, & Psychology
Shawnee State University, Portsmouth, OH

**Student Assistant,** June 1993 - March 1997
Huntington Junior College, Huntington, WV

## *OTHER PROFESSIONAL EXPERIENCE*

2001-2002, Assistant Operations Manager, Human Resources & Facilities
Baxter Healthcare Corporation, BioLife Division, Deerfield, IL

2000-2001, Political Call Center Supervisor
InfoCision Management Corporation, Huntington, WV & Gallipolis, OH

1994-1996, Quality Assurance Inspector, Surface-Mount Operations
Cabletron Systems, Inc., Ironton, OH

***GRANTWRITING***

May 2006 – co-wrote 'Methamphetamine Abuse Prevention Grant', $900,000
Department of Health and Human Services (DHHR)
Substance Abuse and Mental Health Services Administration (SAMHSA)

The following grants were written and submitted for ***Faces of Appalachia: Studies in Ethnicity and Gender***, Marshall University's National Endowment for the Humanities matching grant project. All were submitted February-March, 2004.

- Starr Foundation $750,000
  for Endowed Distinguished Chair in Humanities,

- Parkersburg Area Community Foundation $7,500
  for teacher scholarships to the summer K-12 conference on humanities

- The Ford Foundation $250,000
  for partial funding of Endowed Chair in Humanities

- The Daywood Foundation $100,000
  for endowed fellowship in humanities

- Alex G. Campbell, Jr. Foundation, Inc. $15,000
  for general operating support

- MacArthur Foundation $750,000
  for Endowed Chair in Humanities

- American Express Philanthropic Program $100,000
  for general operating support

- Dunbar Foundation $10,000
  for teacher scholarships to the summer K-12 conference on humanities

- The Bahl Family Foundation $10,000
  for teacher scholarships to the summer K-12 conference on humanities

- The Ellis Foundation $10,000
  for teacher scholarships to the summer K-12 conference on humanities

- Asbury-Warren Foundation $20,000
  for general operating support

- The Bokom Foundation $20,000
  for two scholarships for the Summer Conference on Diversity in Appalachia

- The Wm. W. and Margaret L. Breshnahan Foundation $5,000
  for support of the Summer Conference on Diversity in Appalachia

***GRADUATE-LEVEL COURSES TAUGHT***

Educational Psychology (electronic course)
Human Resource Management (co-instructor/course developer)

***UNDERGRADUATE COURSES TAUGHT***

Basic Mathematics (undergraduate/developmental)
Introduction to Algebra (undergraduate/developmental)
Intermediate Algebra (undergraduate/developmental)
Technical Mathematics
Statistics

***PUBLICATIONS: Refereed Journal Articles***

Galbraith, M. W., & Jones, M. S. (in press). The art and science of teaching developmental mathematics: A community college instructor's perspective and experience. *Journal of Developmental Education.*

Jones, M. S., & Pauley, F. (2003). Mentoring beginning public school teachers. *Adult Learning, 14* (1), 23-25. *Issue was published in May, 2005.

***PUBLICATIONS: Conference Proceedings***

Jones, M. S., & Galbraith, M. W. (2006, January). Thinking style differences of female college and university presidents: A national study. *Proceedings of the 2006 4th Annual Hawaii International Conference on Education,* Honolulu, HI: HICE.

Galbraith, M. W., & Jones, M. S. (2006, January). Using critical incident questionnaires to optimize learning. *Proceedings of the 2006 4th Annual Hawaii International Conference on Education.* Honolulu, HI: HICE.

Jones, M. S. (2005, January). Strategy & attitude: Effective instruction in developmental collegiate mathematics. *Proceedings of the 2005 3rd Annual Hawaii International Conference on Education,* Honolulu, HI: HICE.

Jones, M. S., & Nicholson, B. E. (2004, November). No longer steering from a distance: Teachers experiences in a school taken over by the state. *Proceedings of the 2004 American Educational Studies Association National Conference*, Kansas City, MO: AESA.

***CONFERENCE PRESENTATIONS***

"Utilizing a Mentoring Model to Enhance the Instructional Process," 55th National Adult and Continuing Education Conference, Milwaukee, WI, November 9, 2006.

"Thinking Style Differences of Female College and University Presidents: A National Study," 4th Annual Hawaii International Conference on Education, Honolulu, HI, January 9, 2006.

"Using Critical Incident Questionnaires to Optimize Learning," 4th Annual Hawaii International Conference on Education, Honolulu, HI, January 6, 2006.

"A Mentoring Model to Improve Instruction in the College Classroom," 54th National Adult and Continuing Education Conference, Pittsburgh, PA, November 9, 2005.

"'Letting Yourself Feel': Relationships as a Key to Learning for Appalachian Girls," 28th Annual Appalachian Studies Association Conference, Radford, VA, March 19, 2005.

"Strategy & Attitude: Effective Instruction in Developmental Collegiate Mathematics," 3rd Annual Hawaii International Conference on Education, Honolulu, HI, January 6, 2005.

"No Longer Steering from a Distance: Teachers Experiences in a School Taken Over by the State," American Educational Studies Association National Conference, Kansas City, MO, November 6, 2004.

***COMMITTEE ACTIVITIES***

April 2005, Outstanding Advisor Committee, Marshall University, doctoral student representative.

August 2002 – May 2004, Developmental Mathematics Committee, Ashland Community & Technical College.

***PUBLIC/COMMUNITY SERVICE***

Session Facilitator, Logan County Drug Summit, Logan, WV, October 2006.

Registered Judge, West Virginia State Social Studies Fair, WV Department of Education, April 2006.

Judge, West Virginia State Social Studies Fair, WV Department of Education, April 2005.

Judge, Kanawha County (West Virginia) Schools, Science & Social Studies Fair, February 2005.

## *PROFESSIONAL ASSOCIATION MEMBERSHIPS*

2006-present: American Evaluation Association (AEA)
2006-present: Council for the Study of Community Colleges (CSCC)
2006-present: Mountain Plains Adult Education Association (MPAEA)
2004-present: American Educational Studies Association (AESA)
2004-present: American Assn. for Adult and Continuing Education (AAACE)
  2005-present: Commission of Professors of Adult Education (CPAE)
  2004-present: Commission of Adult Learning and Literacy (CALL)
2004-present: Association for the Study of Higher Education (ASHE)
2000-present: National Association of Female Executives (NAFE)
2000-present: National Organization for Women (NOW)
1997-present: American Association of University Women (AAUW)

## *HONORS & AWARDS*

2006, Spencer Foundation National Dissertation Fellowship candidate
2003, The National Scholars Honor Society
2000, President's List, Shawnee State University
1998-1999, Dean's List, Shawnee State University
1997, Outstanding Student Achievement Award, Huntington Junior College
1997, Honors Graduate, Huntington Junior College
1997, Commencement Speaker, Huntington Junior College
1993, Chester A. Riley Scholarship, Huntington Junior College