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Transformational and transactional leadership styles: An empirical investigation of Rogers' principle of integrality

Kilker, Mark Joseph, Ed.D.

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U·M·I
300 N. Zeeb Rd.
Ann Arbor, MI 48106

TRANSFORMATIONAL AND TRANSACTIONAL LEADERSHIP STYLES: AN EMPIRICAL INVESTIGATION OF ROGERS' PRINCIPLE OF INTEGRALITY

by

Mark Joseph Kilker

Dissertation Committee:

Professor Marilyn Rawnsley, Sponsor
Professor Marvin Sontag

Approved by the Committee on the Degree of Doctor of Education

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ABSTRACT

TRANSFORMATIONAL AND TRANSACTIONAL LEADERSHIP STYLES: AN EMPIRICAL INVESTIGATION OF ROGERS' PRINCIPLE OF INTEGRALITY

Mark Joseph Kilker

The purpose of this descriptive, correlational study was to begin to frame transactional and transformational leadership theory within the context of Martha Rogers' Science of Unitary Human Beings. From a Rogerian perspective, creativity, power as knowing and time experience were postulated to be correlates of human field patterning. Consistent with the Rogerian concepts of energy fields, open systems, patterning and pandimensionality this study examined the relationships between leadership styles and variables explained by the principle of integrality.

The sample consisted of 439 nursing faculty from 59 baccalaureate and higher degree programs throughout the United States. Participants completed a demographic form and four instruments including: The Multifactor Leadership Questionnaire Form 5X--Self Rater (Bass & Avolio, 1991); The Revised Art Scale (Welsh, 1980); Power as Knowing Participation in Change Test (Barrett, 1987); and the Time Metaphor Test (Knapp & Garbutt, 1958). The data were

analyzed using Person r correlation coefficients, canonical correlations, multiple regression and factor analysis.

In comparison to normative data provided by Bass and Avolio (1990), Nursing faculty in this study scored in the 90 to 99th percentile on transformational leadership, in the 50th percentile on contingent reward (a subcomponent of transactional leadership), and below the 10th percentile on laissez-faire (non-leadership).

Power as knowing was found to be moderately correlated with leadership style, with thirty-six percent of the variance on leadership accounted for by power as knowing. While several statistically significant relationships existed between leadership style and creativity and leadership style and time experience, they were not of sufficient magnitude to be considered theoretically meaningful. Demographic variables were not correlated with leadership style.

An alternative interpretation of the Time Metaphor Test results was discussed and suggestions for future research were presented.

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Mark Joseph Kilker

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THE HISTORY OF LIFE on earth
has been the history of
interaction between living
things and their surroundings.

Rachel Carson
Silent Spring, (p. 5)

Chapter I

INTRODUCTION

The purpose of this research is to begin to frame transactional and transformational leadership theory (Bass, 1985; Burns, 1978) within the context of Martha Rogers' Science of Unitary Human Beings (Rogers, 1970, 1986, 1989, 1990, 1992). Within a Rogerian perspective, creativity, power as knowing and time experience are postulated to be correlates of human field patterning (Alligood, 1991; Barrett, 1983; Rawnsley, 1977). Consistent with the Rogerian concepts of energy fields, open systems, patterning and pandimensionality (Lutjens, 1991; Rogers, 1970, 1986, 1990, 1992) this study assumed the homeodynamic principles of resonancy and helicy and examined the relationships between leadership styles and variables explained by the principle of integrality.

Background of the Study

The focus of this descriptive study was to examine transactional and transformational leadership styles using correlates consistent with Martha Rogers' homeodynamic principle of integrality. This study adds to the existing body of knowledge related to leadership and will contribute to the further development of the Rogerian Science of Unitary Human Beings.

Martha E. Rogers (1970) proposed that "the descriptive, explanatory and predictive principles that direct professional nursing practice are rooted in a fundamental concept of the wholeness of life" (p. 34). As with organizational psychologists, who recognized the limitations of logical positivism and operationalism as paradigms for explaining phenomena (Bass, 1985; Bennis & Nanus, 1985; Burns, 1978; Peters & Austin, 1985; Peters & Waterman, 1982), Rogers spurned a worldview formed by Cartesian philosophy emphasizing a reductionistic, mechanistic, and analytic view. In its place she substituted a paradigm of nursing formed by quantum physics (Caroselli-Dervan, 1990) which emphasizes the interrelatedness of phenomena. Significant postulates of Martha Rogers' Science of Unitary Human Beings (Rogers, 1992) include energy fields, openness, pattern, and pandimensionality.

The study of leadership has long been considered to be within the domain of nursing. Florence Nightingale, widely considered to be the founder of modern nursing, spent virtually all of her professional career in administration and recognized the importance of leadership to nursing (Baly, 1986; Henry, Woods & Nagelkerk, 1990; Palmer, 1983, Woodham-Smith, 1950). Nightingale (1859) wrote:

> How few men, or even women, understand, either in great or in little things, what it is the being "in charge" - I mean, know how to carry out a "charge." From the most colossal calamities, down to the most trifling accidents,

> results are often traced (or rather *not* traced) to such want of some one "in charge" or of his knowing how to be "in charge." (p. 41)

Although nursing administration's theoretical foundation can be traced to Nightingale, the surge to develop nursing theory did not take place until the mid-1950's (Jennings & Meleis, 1988). In the intervening years there has been marked progress in theory development within nursing as a discipline (Meleis, 1985). However, theory development within nursing administration has not kept pace (Rawnsley & Evans, 1992).

Kuhn (1970) suggests that scientists who are discontent with a particular paradigm are disposed to look for other models which more appropriately reflect the consensus of the group. Blalock (1984) postulates that one way to identify meaningful theoretical linkages is to combine conceptual models from different disciplines. Clearly, the historical image of nursing administrators as authoritarian, controlling and hierarchical has shifted to a more humanistic view of administration (Dunham, 1989). From a nursing perspective, and particularly from Rogerian world view, the emergence of a transactional and transformational paradigm of leadership provides an important conceptual link upon which nursing administration can build.

In summary, scholars have only recently begun to subject Rogerian and leadership theories to empirical study

(Bass, 1985; Barker, 1990; Henry & Christman, 1986; Kim, 1983; Rawnsley, 1990a; Rawnsley & Evans, 1992). In addition, while studies reframing leadership theory within a Rogerian perspective have been called for by nursing scholars (Alligood, 1989; Gueldner, 1989), they have not yet been done. Therefore, it is hoped that this research will add to the existing body of knowledge pertaining to leadership and in the process, begin to revise and extend Rogerian and leadership theories.

Problem Statement

The problem for study is stated as:

How much of the variance on preference for leadership styles of nurse educators can be explained by the variables creativity, power as knowing and time experience?

Need and Significance for the Study

Bass's introductory book entitled Leadership and Performance Beyond Expectations, was first published in 1985. In the preface (p. xv), Bass comments on the need for empirical investigation of the transformational leadership model:

> The book is an initial statement of what we can do to study and determine the antecedents and effects of transformational leadership. The models that are presented should be seen as preliminary scaffolding. They suggest a variety of relationships about which much empirical testing still remains to be done.

Nursing scholars have called for blending leadership theory with nursing theory into educational administrative practices (Alligood, 1989; Andruskiw, 1983; Barker, 1990; Rawnsley & Evans, 1992). However, the application of Rogerian and transformational theory has not yet been widely subjected to empirical testing in the nursing education administration field.

Although nursing education and nursing service share a common bond, nursing's position in colleges and universities is in stark contrast to the roles that nursing service administrators play in direct care setting. Nursing service administrators operate in a highly structured health care environment based in large measure on a business model of organizations. The chain of command is relatively well defined and the focus of the nursing service administrator is on directing the provision of quality care and on cost containment (Anderson, 1989).

In contrast to the business model found in nursing service environments, nursing education administrators function in settings based upon a model of collegiality. The role emerging from this model, with its combined focus on research, scholarship, teaching, and service, in addition to administrative duties, places workload strains on nursing education administrators that differ considerably from those of nursing service administration.

Shared governance, recently introduced into the service environment, has been a guiding principle in the governance of colleges and universities for over 800 years (Murphy, 1983. Although shared governance offers greater opportunity for autonomous decision making, it requires a greater understanding of how to work with people and how to use power (Princeton & Gasper, 1991 Rogers, M.A., 1989).

Most nursing education administrators are initially socialized in the service environment and have little or no educational preparation in educational administration (Princeton & Gasper, 1991). It is not surprising that there is a high turnover rate among nursing education administrators.

George (1981) reported that seventy-nine percent of academic middle managers in baccalaureate nursing reported that they did not plan to continue their current position or seek an advanced leadership role. More recently, the American Association of Colleges of Nursing (1993a) surveyed nursing education administrators in baccalaureate and graduate programs of nursing. They found that 63.1% of the nursing education administrators were in their first position as dean, suggesting a high turn over rate and a shortage of interested, qualified individuals for top leadership positions in colleges of nursing.

In a national survey of nursing deans and faculty, the American Association of Colleges of Nursing found that

ninety-nine percent of the nursing education administrators (1993a) and ninety-seven percent of nursing education faculty (1993b) in colleges of nursing and universities across the United States are women. According to Barge (1986) "the path to deanship is through positions as faculty in colleges of nursing" (p. 186). Because the pool of future nursing education administrators comes from the faculty, there is a need to study the characteristics of this group of potential leaders.

Women in higher education face significant obstacles not encountered by their male counterparts. Gender bias and role conflict, rapid turnover of those in nursing leadership positions (Princeton, Gasper 1991; McClure, 1990) and a projected shortage of new faculty (Bergmann, 1991; Carpenter, 1989) suggest that there is a critical need to identify, develop and retain leaders in nursing education administration. It is of particular importance to identify leadership characteristic of nursing faculty (Barge, 1986).

Little research or theoretical work has been done on nursing administration and leadership (Lucas, 1986; Henry, 1988; Henry, O'Donnell, Pendergast, Moody, Hutchinson, 1988; Henry, 1989. Given the accelerated rate of change in contemporary society (Rogers, 1990; Peters, 1987), there is an imperative for theory development which blends nursing and administrative theory.

In 1974, Delegates of the American Nurses' Association resolved that for the next decade nursing research and theory would focus on the practice of Nursing (Downs, 1979). Since then, there has been a rapid increase in the number of nursing practice related studies and a decrease in the number of studies in the field of nursing administration (Trandel-Korenchuk, 1986). For example, Hermansdorfer, Henry, Moody and Smyth (1990) analyzed nursing administration research and reported that from 1977 to 1986 the use of leadership theory in studies conducted by nurses decreased.

Although the focus of nursing research has shifted to the practice setting, scholars within the nursing administration domain recognize the imperative to blend both nursing and administrative theory. As isolated sets of constructs, neither nursing nor administrative theory adequately explains the various phenomena of interest to nursing administrators (Anderson, 1989; Blair, 1989; Henry, 1987; Henry, et al., 1988; Henry, 1989; Jennings & Meleis, 1988; McCloskey, Gardner, Johnson & Maas, 1988; Rawnsley & Evans, 1992). The task of nursing education administration, therefore, is to assess theoretical perspectives in both nursing and organizational sciences and develop methodologies that blend and test theory from each of these fields.

According to Barrett (1990), Rawnsley (1977) completed the first study to derive hypotheses solely from the constructs of Martha Rogers' Science of Unitary Human Beings in 1977. Since then a number of studies have used a Rogerian perspective (Barrett, 1990; Malinski, 1986) to guide their investigation (Allen, 1988; Alligood, 1991; Barrett, 1983; Conner, 1986; Cowling, 1984; Daffron, 1989; DeSevo, 1991; Dzurec, 1986; Ference, 1979; Gueldner, 1983; Guthrie, 1987; Johnson, 1981; Ludomirski-Kalmanson, 1984; Macrae, 1982; Malinski, 1981; McDonald, 1981; McEvoy, 1988; Miller, 1984; Paletta, 1990; Raile, 1982; Sanchez, 1987; Schodt, 1988; Schorr, 1983; Smith, 1987; Smith, 1986; Trangenstein, 1989). Conversely, while there have been several studies of nursing education administration, no studies were located related to nursing education administration developed from a Rogerian perspective.

Purposes

This study was conducted in order to examine the conceptual compatibility between Rogerian correlates of the Science of Unitary Human Beings and the model of transactional and transformational leadership styles proposed by Bass (1985). The focus of the study was to examine how much of the variance on leadership styles can be explained by the variables creativity, power as knowing and time experience.

Research Questions

1. What is the relationship between creativity and transactional/transformational leadership styles?

2. What is the relationship between power as knowing and transactional/transformational leadership styles?

3. What is the relationship between time experience and transactional/transformational leadership styles?

4. To what extent can preference for leadership style be explained by the combination of creativity, power as knowing, and time experience?

5. Are there significant relationships among selected demographic variables of educational preparation, length of work experience, type of school, and scores on leadership style, creativity, power as knowing, and time experience?

Definition of Terms

The following definitions are proposed:

Creativity: Refers to the perceptual preference for complexity as measured by the Revised Art Scale (Barron & Welsh, 1963; Welsh, 1980).

Leadership: "Leadership over human beings is exercised when persons with certain motives and purposes mobilize in competition or conflict with others, institutional, political, psychological, and other resources so as to

arouse, engage, and satisfy the motives of followers" (Burns, 1978, p. 18).

Non-leadership: Refers to Laissez-faire (LF) leadership style, indicating avcidance of intervention, as measured by the Multifactor Leadership Questionnaire (Bass & Avolio, 1990).

Power: Refers to the pattern diversity manifested by the individual characterized by the capacity to participate knowingly in the nature of change (Barrett, 1983). It is operationally defined as scores obtained on the Power as Knowing Participation in Change Test (PKPCT) which utilizes semantic differential technique to measure awareness, choices, freedom to act intentionally, and involvement in creating change.

Time experience: Refers to the individual's perception of the passage of time as measured by scores on the three subscales of the Time Metaphor Test (Knapp & Garbutt, 1958). These include:

Vectorial clusters: "consists of seven metaphors suggestive of a constant and directional rate of motion" (Allen, 1988).

Humanistic clusters: "consists of eight metaphors depicting human figures or human artifacts" (Allen, 1988).

Oceanic clusters: "consists of seven metaphors of images drawn from nature in which motion is absent or vague and non-directional" (Allen, 1988).

Transactional Leadership (TA): Is characterized by leaders who recognize what their followers want to get from their work, and try to see that they get it, if their performance so warrants; exchange rewards and promises of reward for appropriate levels of effort; and respond to the needs and desires of followers as long as they are getting the job done (Bass & Avolio, 1990).

It is operationally defined as the score obtained on the Multifactor Leadership Questionnaire (Bass & Avolio, 1990) which identifies two factors that characterize transactional leadership:

Contingent reward: Refers to leaders who provide appropriate rewards when followers meet agreed upon objectives (Bass & Avolio, 1990).

Management-by-Exception (active): Refers to leaders who actively seek to identify mistakes and takes corrective action (Bass & Avolio, 1990).

Management-by-Exception (passive): Refers to leaders who intervene only if standards are not met or if something goes wrong (Bass & Avolio, 1990).

Transformational Leadership (TF): Is characterized by leaders who raise followers' level of awareness of the

importance of achieving valued outcomes and the strategies for reaching them; encourage followers to transcend their own self-interest for the sake of the team, organization, or larger policy; and develop followers' needs to higher levels in such areas as achievement, autonomy, and affiliation, which can be both work-related and nonwork-related (Bass & Avolio, 1990).

It is operationally defined as the score obtained on the Multifactor Leadership Questionnaire (Bass & Avolio, 1990) which identifies four factors characterizing transformational leadership:

Charismatic: Refers to a leader who has a vision and a sense of mission. Gains respect, trust, and confidence. Acquires strong individual identification from followers (Bass & Avolio, 1990).

Inspirational: Refers to a leader who increases optimism and enthusiasm and communicates his or her vision with fluency and confidence (Bass & Avolio, 1990).

Intellectual Stimulation: Refers to a leader who actively encourages or fosters creativity and stresses the use of intelligence. Provokes rethinking and reexamination of assumptions and contexts on which previous assessments were based (Bass & Avolio, 1990).

Individual Consideration: Refers to a leader who gives personal attention to all members, making each individual

feel valued and each individual's contribution important (Bass & Avolio, 1990).

Assumptions

1. It is assumed that a subject's reported preference for leadership styles is reflective of their own leadership patterning.

2. It is assumed that TF/TA/LF human field patterning reflects a multidimensional, nonlinear, nonadditive capacity rather than a linear, incremental, learned managerial skill.

3. It is assumed that TF/TA/LF human field patterning are traits that all individuals possess in varying degrees.

Delimitations

The sample is delimited to baccalaureate and higher degree nurse educators who do not currently hold a nursing education administrative position and who hold a minimum of a masters degree in nursing or related field.

Summary

This study will examine transactional and transformational leadership theory (Bass, 1985; Burns (1978) from the perspective of Rogers' (1970, 1986, 1990, 1992) Science of Unitary Human Beings.

The principle of integrality, which focuses on the continuous mutual process of human and environmental fields,

serves to conceptually bond the two models. Stemming from this, creativity, power as knowing, and time experience are postulated to be important constructs relative to transactional and transformational leadership styles.

While leadership has long been considered to be within the domain of nursing, there have been few empirical studies related to application of leadership theory to nursing education administration. Examining Martha Rogers' concepts of nursing relative to transformational leadership constructs provides a unique opportunity to extend and create new knowledge related to leadership and the Science of Unitary Human Beings.

Outline of Dissertation

Chapter II, Literature Review, begins with an overview of the Science of Unitary Human beings. Literature relevant to TA/TF/LF, creativity, power as knowing, and time experience are also presented. Emphasis was placed on literature pertinent to the theoretical constructs and research findings related to TA/TF/LF, creativity, power as knowing, and time experience. Chapter III, Methodology, describes the research methods used in this study. The sampling procedure, instruments, and proposed data analysis procedures are also discussed. Chapter IV analyzes the results of the study. Information relative to demographic variables and statistical analysis of the hypothesized

correlates of transactional and transformational leadership will be presented. Chapter V describes the results of the study.

Chapter II

REVIEW OF THE LITERATURE

This investigation is rooted in two theoretical domains: The Science of Unitary Human Beings and transactional/transformational leadership styles. Creativity, power as knowing and time experience are postulated to be correlates of human field patterns related to leadership style. Therefore, the review of literature was delimited to theory and research on these topics. Focus was placed on studies conducted from a Rogerian perspective.

The Science of Unitary Human Beings

Significant postulates of Martha Rogers' Science of Unitary Human Beings (Rogers, 1992) include energy fields, openness, pattern, and pandimensionality. An energy field is the fundamental unit of the living and the non-living. Energy signifies the dynamic nature of the field. Field is a unifying concept and is in continuous motion and is infinite (Rogers, 1992).

Openness signifies a constant interchange of energy with environment. A universe of open systems explains the infinite nature of energy fields and how the human and environmental fields are integral with one another. Open systems are characterized by growing complexity and diversity (Rogers, 1986, 1990, 1992). According to Rogers,

because the universe is an open system where the human and environmental fields are engaged in a continuous mutual process, the notion of causality is invalid (1992).

Pattern is the distinguishing characteristic of an energy field. Human field pattern is an abstraction and is not directly observable. However, manifestations of human field pattern are observable events and are postulated to emerge out of the human-environmental field mutual process. The mutual human and environmental field process is manifested by change that is unpredictable, continuous, relative, and innovative (Rogers, 1992).

Pandimensionality is described as a non-linear domain without spatial or temporal attributes (Rogers, 1992). The postulate of pandimensionality replaces the terms "unidirectionality" (Rogers, 1970), "four dimensionality" (Riehl-Sisca, 1989), and "multidimensionality" (Rogers, 1990) previously used by Rogers. Rogers (1992) suggests that the term "pandimensionality" does not represent a change in the definition. Rather, the term "pandimensionality" better reflects how to perceive reality in a universe of open systems with growing diversity of people and their environments (p. 31).

Rogers (1992) uses three homeodynamic principles to link the postulates of energy fields; including openness, pattern, and pandimensionality. The principle of resonancy describes a continuous change from lower to higher frequency

wave patterns in human and environmental fields. Helicy reflects the continuous, innovative, unpredictable, and increasing diversity of human and environmental field patterns. The principle of integrality is characterized by the continuous mutual human field and environmental field process.

In attempting to operationalize Rogers' Science of Unitary Human Beings, the principle of integrality most clearly speaks to the concerns of nursing education. Functioning within the environment of higher education, nursing educators are experiencing continuous, mutual process with organizational energy fields. Thus nursing educators and the higher education environment are different and more diverse through this relationship.

The continuous and mutual process of human and environmental fields is consistent with the leadership theory proposed by Burns. Burns (1978). describes the relationship between a transformational leader and follower as mutually beneficial. This type of relationship tends to convert followers into leaders and leaders into moral agents. In Rogerian terms, transformational leaders and followers, have energy fields which are engaged in continuous mutual process and are in motion toward increasing diversity. The shift from transformational leader to moral agent and, from follower to leader,

represent the human field patterns which are conceptually compatible with Rogerian notions of increasing diversity.

Transactional and Transformational Leadership

Neumann and Bensimon (1990) assert that recent organizational and leadership studies have enlarged on a traditional perspective.

> Rather than viewing leadership purely as an external, physical, and behavioral phenomenon, they view it as a more complex "enactment" of deeper, personally constructed understandings and beliefs about the nature of reality (p. 679).

The study of leadership has a long history (Lucas, 1986. Burns (1978) observed that for at least two thousand years some of the most recognizable scholars, such as Plato and Confucius, have studied and written about the concept of leadership. In modern times, two general trends in the study of leadership have emerged.

Prior to 1950, most research tended to focus on specific traits of leaders. For example, Lewin, Lippitt, and White's 1939 study describing autocratic, democratic and laissez-faire leadership styles illustrates a research focus on the personal qualities of the individual leader (Lucas, 1986; Gevedon, 1992). In contrast, since the 1950's, research and theoretical emphasis has been placed on a situational approach to the study of leadership. That is,

leadership depends upon the characteristics of the leader, followers, and the situation (Stogdill, 1974).

Transformational leadership, heavily influenced by situational leadership theory, was first described by Burns (1978) in his Pulitzer Prize winning book entitled Leadership. Burns focused his work on characteristics of world renowned leaders such as Mahatma Gandhi, Franklin D. Roosevelt, Woodrow Wilson and John F. Kennedy. He concluded that there are two types of leaders: transactional and transformational.

According to Burns (1978) transactional leaders primarily interact with followers in order to exchange one thing for another; for example, politicians who promise jobs for votes. On the other hand, transformational leaders are acutely sensitive to the needs and motives of potential followers and seek to satisfy higher needs by engaging the full person of the follower. The resulting relationship is mutually beneficial and tends to convert followers into leaders and leaders into moral agent.

Burns (1978) emphasized the importance of moral leadership in conjunction with transformational leaders and described three essential elements of moral leaders. First, moral leaders and followers have mutual needs, aspirations and values. Second, in relation to the decision making process, followers have adequate knowledge of alternatives

and the capacity to choose among them. And third, leaders assume responsibility for their commitments to followers.

Bass (1985, 1990, 1990b) operationalized the work of Burns (1978) by isolating constructs of transactional and transformational leadership from the perspective of contemporary organizational psychology. Bass (1985, 1990, 1990b) characterizes transactional leaders by their use of contingent reward or management-by-exception and laissez-faire leadership styles. Transformational leaders are characterized as having four components: charisma, inspiration, intellectual stimulation, and individual concern for followers.

Bass's (1985, 1990, 1990b) conceptualization of leadership styles differs significantly from Burns (1978) in two ways. First, Burns (1978) describes individuals at opposite ends of a single continuum. Bass (1985; Bass & Avolio, 1990; 1990) on the other hand, views individuals as having a variety of patterns of both transactional and transformational characteristics: "*Most leaders do both but in differing amounts*. (1985, p. 22)". Secondly, Bass proposes that individual transactional and transformational leadership traits are consistent, regardless of the situation. For example, transformational leaders are more likely to emerge in times of growth, change and crisis. However, this does not mean that these traits are absent in "steady state" bureaucracies. Rather, the transformational

leader will need to work harder in order to mobilize change (Bass, 1985, p. 17).

Human Field Patterns

Rogers' principle of integrality provides the rationale for identifying correlates of transactional and transformational leadership styles. Both models, the Science of Unitary Human Beings and transactional/ transformational leadership, are concerned with the multidimensional nature of experiences, particularly within the context of the environment. Both models are also concerned with levels of diversity. In Rogerian terms, pandimensionality and diversity are integral to the human-environmental process. These interactions are manifested in human field patterns. In this study, creativity, power as knowing and time experience were considered manifestations of the human field patterns.

Rogers reports that pattern is a key postulate of the Science of Unitary Human Beings (1992). Pattern is defined as the distinguishing characteristic of an energy field, perceived as a single wave which is not directly observable. Each human field pattern is unique and is integral with its own unique environmental field pattern. While energy fields are not directly observable, manifestations of field pattern are observable events in the real world.

Since the number of field pattern manifestations is infinite, unpredictable and creative, Rogers does not attempt to provide specific lists. However, Rogers does provide examples to illustrate the concept of field pattern manifestations which are conceptually consistent with this study. For example, diversity may manifest as either lesser or greater diversity; individuals may be pragmatic, imaginative or visionary; and time experience may be experienced as slow, faster or timeless (Rogers, 1992). Power as knowing, acknowledged by Rogers (1986) as conceptually consistent with the Science of Unitary Human Beings, was developed by Barrett (1983) from a Rogerian perspective.

Corollaries to these field patterns within the leadership domain are creativity, power as knowing, and time experience, recurring themes in literature related to leadership. In Rogerian terms, creativity, power as knowing and time experience are manifestations of human field patterns which can be observed and measured. Of interest in this study are the relationships between these field patterns and leadership styles.

The phenomena of transactional and transformational leadership styles has been widely studied in many different fields including: business and industrial firms, hospitals, religious institutions, military organizations, government agencies, colleges and schools (Bass & Avolio, 1990).

Although a relatively large body of research has accumulated on the topic of transactional and transformational leadership, the focus of discussion here will be on theory and research related to the human field patterns considered in this study. Specifically, theory and research which speak to the relationships between transactional and transformational leadership and creativity, power as knowing and time experience are presented.

Creativity

Empirical study of creativity escalated during the 1950's and 1960's. During that period, a number of Centers were established to study the concept of creativity and a wide variety of sample populations were examined. Much of the applied research focused on creativity in children, particularly within the educational setting (Barron, 1969). While the need for creativity continues to be widely called for in leadership literature, it is prudent to report that a clear definition of what constitutes creativity is not yet settled.

The term creativity has strong historical ties to theology. It's root word, create, is synonymous with the belief that God created the heavens and earth ex nihilo (from spacial and temporal nothingness). In humans, the ability to be creative is considered to be a trait which fundamentally distinguishes us from other species (Arieti, 1976). While definitions of creativity may vary, the human

act of creation always involves a reshaping of given materials, whether physical or mental, into something new (Barron, 1969).

How humans do this has been the subject of intense study and debate; however, there is general consensus that the act of creativity is a multidimensional phenomenon (Alligood, 1986; Arieti, 1976; Chambers, 1969; Cowling, 1986; Cropley, 1967; Barron, 1969; Guilford, 1959; Koestler, 1964; Rogers, 1986; Torrance, 1963). While numerous theories have been proposed relative to key elements of the process (theoretically infinite according to Rogers, 1970; 1986; 1992), creativity is thought to significantly involve a continuous mutuality of person, process and product within the context of environmental influences (Adams, 1988; Arieti, 1976; Torrance, 1963; Barron, 1969).

From a Rogerian perspective, creativity is postulated to be a manifestation of the innovation and diversity of the human field. In addition, creativity is also postulated to occur in all human beings and is a non-linear process involving integrality with the environmental field (Alligood, 1986; Bramlett, 1990; Cowling, 1984; Ference, 1979; Rogers, 1986).

Given the strong conceptual bond between creativity and the Science of Unitary Human Being, several nursing researchers have examined creativity from a Rogerian perspective (Alligood, 1986; Bramlett, 1990; Bray, 1989;

Connor, 1986; Cowling, 1984; Ference, 1979; McEvoy, 1987; Raile, 1983; Yarcheski & Mahon, 1991). While no Rogerian studies were located which fused creativity and leadership, several studies are relevant to the discussion here. Included are studies within a Rogerian perspective related to creativity and studies outside of a Rogerian framework which are related to leadership and creativity.

Using a Rogerian perspective, Raile (1983) studied the relationship of creativity, actualization, and empathy. A convenience sample consisted of 91 volunteers attending large Christian conventions and 145 volunteers obtained from Christian church groups. There were 155 females and 66 males ranging in age from 18 to 60 years old from various geographic locations, occupations and educational levels. Measures of creativity were obtained by the use of the Similes Preference Inventory (Pearson & Maddi, 1966), actualization by the Personal Orientation Inventory (Shostrom, 1966, 1974), and empathy by the Hogan Scale (Hogan, 1975). Findings indicated that there was a low but statistically significant correlation between creativity and empathy ($r = .269$, $p < .001$). When creativity and actualization were combined they accounted for more variance than either one separately. The multiple R of .461 was significant beyond the .001 level and represented 21% of the variance.

Cowling (1986) examined the relationship between mystical experience, differentiation, and creativity as measured by the creativity scale of the Adjective Check List (Gough & Helburn, 1965, Younge, 1975). The sample consisted of 160 college students ranging in age from 17 to 24 years. Utilizing a descriptive correlational design, Cowling explored the principle of helicy by postulating that mystical experience and differentiation comprise a more complete set as an index of diversity of human field pattern than one variable alone. Significant positive linear relationships were found between mystical experience and creativity ($F = 2.37$, $p < .01$) as well as differentiation and creativity ($F = 6.80$, $p < .05$). Results of multiple regression analysis showed that approximately 14.5 percent ($p < .001$) of the total variance in creativity was accounted for by the linear combination of mystical experience and differentiation, lending support to the central hypothesis of the study.

Alligood (1986) studied the relationships between creativity as measured by the Similes Preference Inventory (Pearson & Maddi, 1966), actualization, and empathy in unitary human development. The sample consisted of 236 subjects whose age ranged from 18 to 60 years. Using Rogers' principle of helicy as the rationale for the identification of pattern manifestations and their proposed relationships, Alligood hypothesized that there is a

positive correlation between creativity and empathy and that the combined effects of creativity and actualization will account for more of the variance in empathy than either one will separately. A low ($r = .269$) but significant ($p < .05$) correlation was found between creativity and empathy. In addition, the multiple R for the relationship of creativity and actualization combined with empathy was .46 ($p = .001$), accounting for 21 percent of the variance. Alligood interpreted these results as supporting the relationship of innovativeness and increasing diversity to the human-environment process as postulated by Rogers' principle of helicy.

Desiring to include a sample of persons above age 60, in order to further demonstrate the lack of significant differences in various age groups for the measures used, Alligood (1991) replicated the above study with a sample of 47 men and women between 61 and 92 years. The findings in the replication study did not support a positive correlation between creativity and empathy and the combined effects of creativity and actualization did not account for more of the variance in empathy than either one did separately. Attempting to explain these results, Alligood suggested that the tool used to measure creativity, the Similes Preference Inventory (Pearson & Maddi, 1966), was measuring something other than creativity.

Related to Alligood's study, Crosson and Robertson-Tchabo (1983) also examined age and preference for complexity. The samples consisted of 271 (50 % response rate), 23-87 year old women obtained from mailing lists of four arts organizations in the Washington, D.C. area. The control group consisted of 76 women selected from graduate and class lists of the University of Maryland. Women who were active in professional level creative activity in the arts or letters were specifically excluded from the control group. The authors used the Revised Art Scale (Welsh, 1959) to measure creativity. Age ranges for the creative group and the control group were 22 - 87 and 25 - 74 respectively. Results revealed no significant correlations between age in the creative group of women and Revised Art Scale Scores. However, significantly negative correlations ($r = -.34$, $p < .05$) were found between age and the Revised Art Scale for the control group not selected for creativity ($n = 76$). Crosson and Robertson-Tchabo speculated that preference for complexity may be connected to creative (artistic) activity and may be of less value to other individuals such as school teachers or students.

McEvoy (1987) studied the relationships among the experience of dying, the experience of paranormal events, and creativity in a sample of 56 adults. Based upon Rogers's principle of helicy, McEvoy hypothesized that dying adults would manifest more creativity than adults who are

not dying. The Revised Art Scale of the Barron-Welsh Art scale (Welsh, 1959) was used to measure creativity. McEvoy suggested that failure to find support for the hypothesis may have resulted from two factors. First, dying subjects reported feelings of calm and peacefulness, which may have been in conflict with complex, restless pictures found in the Revised Art Scale. And second, since the Revised Art Scale measures "special talent" found in the criterion group of artists used in the development of the instrument versus "self-actualizing creativeness" found in ordinary life, a different tool may have produced different results (p. 94).

Several studies have been conducted outside of a Rogerian perspective. Because they describe the relationship of creativity and leadership they are relevant to the discussion here.

The relationship between creative style and leader behavior in chief nurse administrators was the focus of study by Adams (1988). The sample population included sixty-six chief nurse administrators of acute care hospitals. The Kirton Adaptation-Innovation Inventory (KAI) (Kirton, 1976, 1987) was used to measure creative style and the Leader Effectiveness and the Adaption Description Scale (Hersey & Blanchard, 1976) was used to measure leader behavior. The KAI is used to measure creative style (adaptive and innovative), and is not a measurement of level of creativity. No significant relationships were found

between creative style and leadership style. However, creative style was found to be significantly related to number of years of experience in current position and the size of the hospital.

Pettigrew (1988) studied creativity and cognitive style, using the KAI to measure creative style and the Jackson Personality Inventory (JPI) (Jackson, 1976), which has a subcomponent measuring preference for complexity. Pettigrew's sample included 568 nursing faculty who teach graduate level courses at National League for Nursing accredited schools. It was hypothesized that the complexity scale of the JPI would have a positive correlation with innovative cognitive style. Data analysis supported the hypothesis ($p = .3668$, $p < .001$).

Ross (1990) studied leadership in 4400 U.S. Air Force Academy cadets. It was hypothesized that transactional and transformational leaders would be found to exhibit different levels of cognitive creativity as measured by The Creative Personality Scale of the Adjective Check List (ACL) (Gough & Heilburn, 1983). Ross found a significant correlation between cognitive creativity and leadership style (Wilks' $\lambda = .86$, $F = 5.76$, $p < .05$).

MacKinnon (1962) studied creativity in architects. Subjects were selected from a panel of five professional architects who were asked to list the forty most creative architects in the United States. Sixty-four were invited to

participate and forty accepted the invitation to come to Berkeley, CA for a weekend of intensive study. Participants were administered a battery of tests. Creativity in these individuals was found to have a low correlation (-.08) with intelligence, as measured by the Terman Concept Mastery Test (Terman, 1956); an "extremely high peak" (data not reported) on the femininity scale of the Minnesota Multiphasic Personality Inventory (Hathaway & McKinley, 1945); and individuals showed a clear preference for "openness to richness and complexity of experience" as measured by the Barron-Welsh Art Scale of the Welsh Figure Preference Test (Welsh, 1959, pp. 487-488).

Power as Knowing

A great deal has been written on the relationship between leadership and power both within and outside of the nursing domain. Barrett's (1983) perspective on power, shared in large measure by Bass (1985), fundamentally differs from most other models. Instead of focusing on "having" or "acquiring" power as many theorists have proposed, Barrett describes the process of "being" powerful.

According to Webster's Ninth Collegiate Dictionary (1987), the word "power" stems from the Old French word "poeir", meaning to be able. "Poeir", etymologists assume, was derived from the Latin word "potere", to be powerful.

According to Kalisch and Kalisch (1982) power relationships are an inevitable part of all forms of human

relations. Russell (1962) postulates that power is a fundamental concept in the social sciences, much like energy a fundamental concept in physics. Central to the interpretation of the concept of power is the philosophical orientation of the power holder and the organizational structure transmitting the will of the power holder (Berle, 1969). Given the potentially infinite number of philosophical and organizational perspectives and the level of interest in power, it is not surprising that many different models of power relationships have been developed.

For example, Caroselli-Dervan (1991), operating from a feminist perspective, states that many of the predominant contemporary models of power rely heavily on the use of force or control in order to exercise power over individuals, particularly with regard to male-female relationships. Hartsock (1985) contends that these types of power relationships are heavily skewed in favor of males in many different contexts including economic and sexual. As an alternative, Wheeler and Chinn (1989) propose that rather than focusing on control, power derives from empowering the individual through the development of self-awareness, responsiveness to others, focus on consensus, and a desire for growth.

Within the context of nursing administration, power is frequently referred to as the ability to influence or control others (Davidhizar, 1993; Heineken & Wozniak, 1988;

Willey, 1994); the ability to obtain and allocate resources (Nelson, 1989; Smith, 1985); or as the capacity to achieve goals in an organization (Elberson, 1989). While nursing has not universally adopted a specific model of power, French and Raven's (1959) model of power has been used by nurse scholars to operationalize power (McFarland & Shiflett, 1982; Willey, 1994; Wolf, 1985). Core concepts of French and Raven's (1959) power model include reward, coercion, legitimate power, referent power, expert knowledge, and access to information. In summary, many models of power adopted by nurse administrator have had strong themes of control and domination.

Although the focus of literature on power in nursing administration has had strong elements of control, a more humanistic approach has begun to emerge. For example, Dunham (1989) suggests that power is achieved by empowering others. The more power that is given away, the more it is gained. Maraldo (1985) contends that individual self-confidence is the fundamental source of power. Kosowski et al. (1990) have developed an interactive power model which focuses on shared vision and consensus. Key elements in this interactive power model include deciding, relating, influencing and facilitating. These few brief examples are representative of a growing trend in nursing administration away from power models with strong references to control to

models that are inclined to focus on the individual and facilitating processes.

Burns (1978) examined power within the context of world politics. He states "that viewing politics *as* power has blinded us to the role of power *in* politics" (p. 11). According to Burns, power should be not be viewed as a thing but rather as relationships in which two or more persons engage with one another. The purpose of leadership is to induce followers to act for certain goals that represent the values, motivations, aspirations and expectations of *both leaders and followers*. However, while power permeates all human relationships and exists whether or not it is sought, just because individuals have power, does not mean that they are leaders. For example, to control things, such as money and material resources is an act of power not leadership, since things, per se, do not have motives.

Bass (1985) operationalized the concepts of transactional and transformational leadership described by Burns through the development of the Multifactor Leadership Questionnaire. Bass differs from Burns on one point relative to power and leadership. Burns views transformation as something that is necessarily elevating, furthering good rather than evil. According to Bass (1985), determining whether or not an individual is a transformational leader does not depend on whether the process or outcome is good or evil. For example, while Bass

would described Hitler as a transformational leader because of the impact that Hitler had on the world, Burns would disqualify Hitler as transformational leader because the way Hitler used power was inherently evil.

Bass (1985) does not explicitly use or define the term "power" in the book Leadership and Performance Beyond Expectations, although concepts related to power are heavily integrated into the TF/TA/LF model. Bass identifies seven leadership factors which define the leadership roles including: Charisma, Inspiration, Intellectual Stimulation, Individual Consideration, Contingent Reward, Management-by-Exception (active and passive dimensions), and Laissez-Faire (non-leadership). Therefore, it can be deduced that the degree of mutual interaction between leader and follower represents how the power relationship is formed in Bass's model.

After reviewing the literature on power, Barrett (1983) concluded that most of the work continues to explore power from a causal, reductionistic, closed system, dichotomous, linear view of human-environment interactions. While of use for other purposes, this literature is not congruent with a model designed to explore open systems and mutual human-environmental interactions, concepts consistent with the Science of Unitary Human Beings.

Instead, Barrett (1983) postulated that power is a field manifestation that emerges from human-environment

interactions. Based upon the principle of helicy, power as knowing participation in change which is characterized by awareness, choices, freedom to act intentionally, and involvement. Depending on how human beings knowingly participate in change, they share in the creation of reality.

The central focus of Barrett's study (1983) was to develop an instrument to measure awareness, choices, freedom to act intentionally, and involvement. These variables were measured across three human-environmental contexts including individual, family, and occupation (the latter two thought to encompass the environmental field). Barrett's sample included 625 subjects who were diverse in terms age, sex, marital status, education, and occupation. Barrett hypothesized that there would be least one significant relationship between the set of Human Field Motion measures developed by Ference (1979) and the set of concepts-contexts-scales measuring power. The hypothesis was supported by two statistically significant canonical correlations of .61 and .16. The square of the canonical correlations accounted for 40% of the shared variance of the two linear combinations of variables. The redundancy index for the set of power variables accounted for 37% of the hypothesized variance.

However, after field testing the instrument on two separate occasions, it became clear the instrument was not

substantially distinguishing between the contexts (congruency coefficients ranged from .86 to .99). Subsequently, reference to the environmental contexts (family and occupation) were dropped from the instrument.

Barrett considered that finding high level of congruency between the contexts lends support to the Rogerian proposition that human and environmental fields are integral with one another. Commenting on this assessment, Trangenstein (1988) agreed that both the human and environmental fields are integral but felt that the high level of congruency found by Barrett resulted from methodological artifact. Trangenstein (1988) suggests that the environmental context (family and occupation) is different and that it would be conceptually clearer to distinguish between these variables. Since Barrett's (1983) current instrument focuses on the individual, power as knowing in this study was described as an individual characteristic of Unitary field patterning.

Trangenstein's (1988) study concerned the relationships between power, job diversity, job satisfaction and job involvement. Subjects included a random sample of 326 staff registered nurses ranging in age from 21 to 65 who were members of the American Nurses Association. Attempting operationalize Rogers' principle of integrality, Trangenstein hypothesized that there would be at least one significant ($p < .05$) relationship among the predictor and

criterion variables. Analysis of the relationship between individual power and job diversity (environment) with job satisfaction and job involvement yielded a statistically significant (p = .001) canonical correlation of .53. Trangenstein interpreted this to indicate indirect support for Rogers' principle of integrality.

Rizzo (1990) investigated the relationships of life satisfaction, purpose in life, and power in individuals sixty-five years and older. The sample consisted of 84 men and women ages 65 to 81 who were recruited from senior citizen centers in five New York counties. Rizzo hypothesized that purpose in life, measured by the Purpose in Life Test (Crumbaugh & Maholick, 1981) and life satisfaction, measured by the Cantril Ladder (Kilpatrick, 1960) would be positively related to power, measured by the PKPCT Version II (Barrett, 1983) in persons 65 years and older. Purpose in life and power and life satisfaction and power were found to be significantly related to one another (r = .51, p < .001 and r = .38, p < .001 respectively).

Using Rogers' (1990) principle of integrality as the conceptual model, Evans (1990) studied the relationships among a pattern of influence in the organizational environment, power as knowing, and nurse's empathic attributes. The sample consisted of 254 public health registered nurses working in Washington State. The subjects were predominantly caucasian, married females in their late

thirties and mid-forties. The author found low but statistically significant correlations (r = .274, p < .001) between total score on the PKPCT and scores on the Hogan Empathy Scale (Hogan, 1975). Low but statistically significant correlations were also found between the total score on the PKPCT and Job Satisfaction as measured by the Index of Work Satisfaction Questionnaire (Stamps & Piedmonte, 1986) (r = .151, p < .001).

Caroselli-Dervan (1991) studied the relationship of power and feminism in female nurse executives in acute care hospitals. The sample population consisted of 89 volunteer acute care hospital nurse executives whose participation in the study was solicited at various meetings and conferences. It was hypothesized that there would be a positive relationship between power and feminism as perceived by nurse executives in acute care hospitals. A non-significant correlation coefficient was obtained (r = .10, p = .166), therefore the hypothesis was not supported.

Hobbs (1991) studied power in baccalaureate level nursing students. Eighty-eight seniors in four different schools of nursing were administered the PKPCT. From this group of eighty-eight students, nine subjects who scored high and nine subjects who scored low on the PKPCT were selected for interviews to determine factors which helped or hindered their empowerment in the educational environment. The author found that the group with low frequency scores on

the PKPCT identified more themes perceived as hindrances to empowerment such as time constraints and overly structured policies (t = -2.53, p < .024). Conversely, students with high frequency scores on the PKPCT identified more themes perceived as helpers to the student's empowerment such as supportive faculty and independent learning activities (t = 2.41, p < 2.41).

Morris (1991) examined perceptions of power and well-being in 31 community dwelling older adults and 30 older adults residing in nursing home facilities. Ages ranged from 61 to 97 years (mean = 76.9). Findings revealed significant positive correlations between the Cantril Ladder Well-Being subscore (Kilpatrick & Cantril, 1960) and PKPCT scores (p < .01). Therefore, as well-being scores increased, scores on the PKPCT subscales also increased at a statistically significant levels.

Rapacz (1991) studied power as knowing in individuals with chronic pain. The sample consisted of 113 subjects with chronic pain and a control group of 113 matched on age, gender, race and residence. Both groups were administered the PKPCT and the Human Field Motion Test (Ference, 1979). Findings revealed a significant positive relationship between scores on the PKPCT and the chronic pain and control groups (p < .0001). Subjects who had chronic pain tended to score lower on the PKPCT while subjects who did not have chronic pain tended to have higher scores.

Smith (1992) studied power and spirituality in polio survivors from the Rogerian perspective. The sample consisted of 252 participants, 172 polio survivors and 80 people who had not had polio whose ages ranged from 30 to 95. The median age was 52. Two hypothesis have relevance to this study. First, it was hypothesized that there would be a positive relationship between power and spirituality among polio survivors and people who have not had polio. Second, it was hypothesized that power is greater in polio survivors than in people who have not had polio. A weak but positive relationship ($r = .34$, $p < .005$) explained 12% of the variance on the first hypothesis. Smith (1992) concluded that positive correlation on the first hypothesis indicates that as people grow more aware of a transcendent dimension, the nature of their participation increasingly manifests in the actualization of potentials congruent with identifiable spiritual values. As people manifest greater power, they also manifest greater spirituality. The second hypothesis was not supported by the data.

Time experience

In attempting to formulate potential correlates between Rogers' Science of Unitary Human Beings and Bass's TF/TA model, time experience stands out most clearly. References to time are both directly and implicitly articulated by both authors in almost all of their writings.

Rogers' (1992) postulates that human beings and environment are continuously and mutually evolving. Rejecting notions of directionality, Rogers sees manifestations of human and environmental patterns as unpredictable but observable in terms of their degree of diversity. In Rogers's view, time is not an absolute as theorized by Newton, but rather is relative to the present for a given individual (Sarter, 1988). Taken together, these concepts strongly suggest that the human attribute of time experience may be an important field pattern to consider when assessing individual leadership style.

Literature in the area of leadership is replete with references to time. Time management, time-motion studies, and strategic planning are but a few examples of leadership tools currently used to reframe how business and industry conceptualize time. Within Bass's model (1990) of TF/TA Leadership, transformational leaders "arouse and inspire their followers with a vision of what can be accomplished through extra personal effort" (p. 15). In order to develop a shared sense of vision, transformational leaders must possess an awareness of their personal and organizational histories (past experiences) and an sense of what is possible and how to achieve it (future oriented).

A sizable body of literature exists regarding time experience and numerous theories have been developed to explain the phenomena. These theories can be categorized

into two groups including: time experience viewed as a function of biological clock time; and time experience viewed from a cognitive processing approach (Omery & Holt, 1989). Biological sense of time is described as the awareness, usually subconscious, of cyclic functions in our organism. These functions can be, but are not always, associated with astronomical cycles, such as phases of the moon. For example, diurnal cycles in body temperature, hormonal rhythms that parallel the moon cycle (ie. the menstrual cycle), and "jet lag" all been associated with the biological clock time (Meerloo, 1981).

Time experience can also be viewed from cognitive processing approach. This approach explains human time experience as cognitive constructs based on human experience, influenced greatly by sociocultural and historical awareness (Omery & Holt, 1989). Piaget (1981) described the process acquiring a sense of time within the context of child development, particularly with regard to language development. Fraser (1981) postulates that human beings develop an increasing sense of sophistication of time sense through concern for the future, corresponding to expectation of cyclically repetitive events; memory of the past, related to realization of continuities in the world; and awareness of the present, involving integration of expectation and memory. Future, past, and present

orientations are heavily influenced by how an individual perceives these events within a cultural context.

Since the origin of modern industrial society in the eighteenth century, time has exercised an ever growing influence on the way most people tend to think. The development of efficient transportation systems, communication systems, and the development and availability of clocks and wrist-watches has radically affected the tempo of many forms of human activity (Whitrow, 1988. As a manifestation of human field patterning, time experience is evolving in an accelerated fashion as a result of higher frequency environmental field patterns (Rogers, 1992). In light of the mutual, simultaneous nature of human beings and the environment, as cultural awareness (environmental) of time becomes more diverse, it may be expected that an individual's (human being) perception of time would also become more diverse.

While no Rogerian studies were located linking time experience and leadership, several studies are relevant to the discussion here. Included are studies within a Rogerian perspective related to time experience and studies outside of a Rogerian perspective but related to leadership and time experience.

Rawnsley (1977) used the Time Metaphor Test (Knapp & Garbutt, 1958), the Time Opinion Survey (Kuhlen & Monge, 1968) and Estimation of Clock Time (Doob, 1971) to study the

relationships between the perception of the speed of time and the process of dying. The sample consisted of one hundred and eight "young" and "older" subjects who were categorized according to a "dying or not-dying" state. Older persons were between the ages of fifty-five and seventy-five and younger persons were between the ages of seventeen and thirty. Operating from a Rogerian framework, Rawnsley found no significant differences between age and dying status on the Time Metaphor Test. However, there was a strong trend for younger subjects to choose swifter metaphors more than did older subjects. Younger persons with metastatic disease score significantly higher on the Future Orientation and Achievement variable of the Time Opinion Survey ($p < .05$) than did older not-dying subjects.

Macrae (1982) studied the differences between meditating subjects and non-meditating subjects on time experience and human field motion. The sample included forty-five experienced mediators and forty-five subjects who were non-meditators. Macrae found that meditating subjects tended to choose slow rated, non-linear, expansive metaphors whereas the non-meditators tended to choose linear, fast-rated metaphors ($t = 4.74$, $p < .001$).

Paletta (1990) developed the Temporal Experience Scales to measure the concept of temporal experience as a pattern of the developmental process of unitary human beings. Paletta used a convenience sample of 120 which was limited

to females enrolled in graduate nursing courses whose ages ranged from 20 - 40. While conclusions cannot be generalized beyond this population, the Temporal Experience Scales were found to be predictive of human time (R^2 = .15041, F (3,116) = 6.845, p = .0003); age was not found to be significantly related to the Human Time Scale (Yonge, 1973); and the Timelessness subscale of the Temporal Experience Scale was found to be the most significant predictor of the Human Time Scale, accounting for 47% of the variance.

Hastings-Tolsma (1992) examined the relationships between human field pattern to risk-taking and time experience using a convenience sample of 173 subjects from various age, income, ethnic and occupational backgrounds. A central concern of the study was to develop a measure for diversity in human field pattern (the Diversity of Human Field Pattern Scale). In addition to instrument development, Hastings-Tolsma also hypothesized that diversity of human field pattern and risk-taking as measured by the Risk-Taking Questionnaire (Knowles, 1976) would be positively related to time experience. Diversity of human field pattern was found to be weakly but positively related to the vectorial (r = .21, p < .01) and oceanic (r = .19, p < .05) scales of the TMT. Risk-taking was found to be weakly but positively related to the vectorial scale of the TMT (r = .16, p < .05).

Knapp and Garbutt (1958) developed the Time Metaphor Test in an attempting to advance knowledge of personality correlates and difference in time awareness. Since most, if not all, of the initial studies were conducted in the field psychology, it is appropriate to examine seminal work in this field.

Knapp and Garbutt (1958) studied time imagery and achievement motive in 73 undergraduate males. In order to measure attitudes toward time, a list of metaphors a poet might use to represent time was developed. The metaphors clustered into three categories including: Dynamic-Hasty (presently referred to as the Vectorial cluster), Naturalistic-Passive (presently referred to as the Oceanic cluster), and the Humanistic cluster. The Vectorial metaphors are considered to be swift; Oceanic metaphors represent a lack of directionality and the prevailing sense of time as surrounding and encompassing in a passive sense (static); and Humanistic metaphors which are "bound up with the images of time related to human figures and human artifact... The precise psychological significance of this cluster has yet... to be determined" (p. 434). Findings indicated that the achievement motive, as measured by the Thematic Apperception Test (McClelland, Atkinson, Clark & Lowel, 1953), was related ($r = .63$, $p < .01$) to preference for swift, or Vectorial metaphors.

Wallach and Green (1961) studied the subjective speed of time on older and younger adults using the Time Metaphor Test. The sample consisted of two groups: 118 young adults (48 males and 70 females) in their freshman or sophomore year in college; and 160 older persons (65 males and 95 females) contacted through a gerontological research center. Subjects were matched for education and intelligence levels. Findings revealed that older persons considered swift metaphors more appropriate for describing time, while young adults considered static metaphors more appropriate. Wallach and Green concluded that subjective speed of time is more directly influenced by the perceived value of time as one ages. Also, in a separate factor analysis, Wallach and Green (1961) identified a similar pattern of swift to static metaphors as found by Knapp and Garbutt (1958).

Surwillo (1964) examined the relationship between age and perception of short intervals of time. The sample consisted of one hundred and twenty healthy, caucasian males. Subjects were volunteers from the community who came mainly from the professions. Three groups were established including 40 young (mean age = 37.5 years), 40 middle age (mean age 56.1 years) and 40 older persons (mean age 73.7 years). A fourth group consisted of 40 caucasian males admitted to the Baltimore City Hospital because they were unable to support themselves financially, none were bedridden. Subjects were directed to estimate 30, 60 and

180 second intervals by signaling with a telegraphic key. The data revealed no significant differences between non-institutionalized groups. Time estimates by the group of institutionalized older group were found to be significantly shorter ($p < .001$) than the non-institutionalize older group. The author interpreted these results as evidence that changes in perception of time are not systematically related to aging. Shorter estimates of time perception found in the institutionalize group was broadly interpreted as being related to a relative lack of activity associated with institutionalization, intelligence, education, socio-economic status, dependence on others for their well-being, and/or absence of a real future to look forward to.

Kuhlen and Monge (1968) use the Time Metaphor Test and the Time Opinion Survey (Kuhlen & Monge, 1968) to examined correlates of estimated rate of time passage in the adult years. Two groups were employed in the study including 144 male and 153 female graduate students enrolled in courses in educational psychology. The second group consisted of adults in attendance at church schools in a small town in central New York. The Time Opinion survey consists of multiple choice questions identifying five factors including: the Speed of Time Passing, Future Orientation and Achievement, Time Pressure, Delay of Gratification, Current Life Conditions. Regarding the instrument's validity, the authors note that the test items "were constructed to have

substantial face validity; however, whether or not the self-reports elicited bore any relationship to behaviors inquired about is open to question" (p. 428). Factor analysis of these variables revealed that the speed of time passage was related to time pressure, present happiness, and the degree to which life is viewed as exciting. Of the 64 correlations between the Time Metaphor Test and the Time Opinion Survey three were significant at the .05 level of confidence. In addition, results of the study did not support the assertion time passes more quickly for older rather than younger people.

Vision or future orientation are considered to be characteristics of transformational leaders (Bass, 1990). Therefore, studies which correlate the Time Metaphor Test and future orientation scales are of interest to this study.

Siegman (1962) examined future-time perspective and the perception of duration in 27 undergraduate students. Students were asked to enumerate 10 events that referred to things with they might do or which might happen in the future. Once this was completed, students were asked to indicate what age they thought they would be at the occurrence of each of the events. The median differences between the subject's present age and estimates of the age which various events would occur was used as the future-time perspective score. The perception of duration was measured by the Vectorial factor of the Time Metaphor Test. Findings

indicated that future-time perspective correlated with perception of duration (r = .27, p < .05). This finding is consistent with Siegman's hypothesis that the longer the range of future-time perspective the more quickly time appears to pass.

Kastenbaum (1961) examined future time perspective in 209 senior high school students. The author utilized a battery of tests to determine correlations between future time orientation and several of variables. The tests included: the Total Mental Factor score of the California Test of Mental Ability, an intelligence test; D-F Opinion Survey (Guilford & Christensen, 1956), an 11 item true-false inventory of preference for making choices; future extension was tested by a story completion technique developed by LeShan (1952), prediction of future events in their lives, and number of responses to a question "who will you be" (p. 208); and the Time Metaphor Test. Scores on the TMT were found to be significantly correlated to IQ (r = .24, p < .01) and to a non-temporal (devoid of specific references to time) component of the story telling measure of future extension (r = .15, p < .05). Factor loading revealed a strong positive relationship between Vectorial images and needs for achievement. All other correlations were not found to be statistically significant.

Lynch (1971) studied future time perspective and impulsivity in older women. The sample consisted of 80

caucasian females (mean age 79.95), living at home and who did not have incapacitating visual impairments or cerebral organic impairments. Instruments included future time perception as measured by the structured story root method developed by Leshan (1952), three measures of impulsivity, and the TMT. The author hypothesized that aged individuals with more extended future time perception would have more dynamic conception of the passage of time than those with less extended future time perception. A secondary finding revealed that scores on the impulse scores were negatively correlated with TMT scores ($r = .27$, $p < .05$). That is, low scores on this impulsivity scale were associated with Vectorial or rapid concept of passage of time. Accordingly, high scores on the Arrow-Dot test were associated with slow conception of the passage of time.

Several studies were located correlating creativity with power and creativity with time experience. Since the relationship between these variables are relevant to this study, they will be presented here.

Creativity and Power

Bramlett (1990) examined power, creativity and reminiscence in the elderly. Approximately 1100 independently living healthy adults 60 years of age or older were recruited from 13 different senior citizens groups and by direct mailing. This effort yielded a sample of 41 subjects assigned to a control group and 34 assigned to a

experimental group. Experimental subjects were encouraged to share stories from their past life, especially stores describing innovative moments or experiences requiring creative problem solving. Bramlett hypothesized that there would be a positive correlation between the Torrance Test of Creative Thinking (Torrance, 1966) and the Power as Knowing Participation in Change Test, VII (Barrett, 1983). The results failed to support the hypothesis. However, a statistically significant correlation was found between power and creativity in the control group (r = -.347, p = .026), indicating that as power increased in the control group creavity decreased, opposite of the direction hypothesized. In addition, both experimental and control groups demonstrate an increase in power between pre-test and post-test. Creativity significantly decreased between pre-test and post-test in the experimental and control groups.

Creativity and Time Experience

Ference (1979) examined the relationship of time experience, creativity traits, differentiation and human field motion. The sample of 213 subjects, obtained at national conferences or meetings, consisted of nurse educators along with nurses from practice settings and nurse administrators. The primary aim of the study was to develop an instrument to measure human field motion which includes the dimension of activity-time experience, imaginative-creative-potential, and evaluative-complexity-diversity.

From the three factors the author extracted two dimensions labeled complexity-diversity pattern and human field motion. Secondary to the developing the scale, Ference found that there were no significant relationships between creativity, as measured by the Adjective Checklist (Gough & Heilbrun, 1965), and perception of time moving swiftly/slowly as measured by the Time Metaphor Test.

Connor (1986) studied the manifestations of human field motion, creativity and time experience patterns of female and male parents and nonparents. The final sample population consisted of four hundred and fourteen subjects solicited from church groups and included parents and non-parents ranging in age from 21 to 39 years of age. Creativity was measured by the 19 adjective scale extracted from the Adjective Check List (Gough & Heilburn, 1980) and time experience was measured by the Time Metaphor Test. Findings revealed that males scored significantly higher than females on the creativity score with male nonparents scoring significantly higher than male parents, female parents and female nonparents ($p < .01$). The greatest degree of difference for creativity was between male nonparents and female nonparents. Taken as a pair, there were strong to moderate canonical correlations between gender and creativity (-.77) and gender and time experience (.60). Creativity and time experience were not significantly correlated to parent or nonparent status.

Allen (1988) studied the relationships of time experience, human field motion and clairvoyance. One hundred and eighty one subjects were solicited from a variety of educational and community settings. Approximately one-third were male and two-thirds female with ages ranging from 17 to 60, mean = 30.6. Creativity was measured by the 19 adjective scale extracted from the Adjective Check List (Yonge, 1975) and time experience was measured by the Time Metaphor Test. Findings demonstrated a statistically significant relationship between creativity and the Oceanic cluster of the Time Metaphor Test (r = .22, p < .01). In addition, subjects who travelled frequently at high speeds, had meditated, and subjects who believed in the phenomena of extra sensory perception had significantly higher creativity scores than those who did not (data not reported).

Bray (1989) studied the relationship between creativity, time experience and mystical experience. The sample population consisted of 193 college students (47 male and 146 female). Bray hypothesized that high scores on the Revised Art Scale (RA) (Welsh, 1980) would be related to high scores on the Oceanic cluster of the Time Metaphor Test (TMT-O). Findings included a Pearson product-moment correlation of .068 (p = .34) for RA and the TMT-O. Therefore, the data did not support this hypothesis. However, the author did find that females scored

significantly higher than males on the RA scale (t = 2.11, p < .036).

Attempting to determine whether Rogers' (1980) original or revised theory (Rogers, 1986) of correlates have more credence, Yarcheski and Mahon (1991) examined the usefulness of chronological age as a predictor of human field patterning. The sample population consisted of 12-14, 15-17, and 18-21 year olds representing early, middle and late adolescence (n = 116 per group). A fourth group was selected from the early, middle and late adolescent groups. Admission to this group was based upon a high score on the Perceived Field Motion Scale (Yarcheski & Mahon, 1991) regardless of age (n = 89). Several tests were administered to the subjects including the Perceived Field Motion Scale, Human Field Rhythms test (Yarcheski & Mahon, 1991), the Creativity Scale of the Adjective Checklist (Gough & Heilburn, 1983), a subscale of the Personality Research Form (Jackson, 1984) to test sentience, and factor II of the Time Experience Scales (Sanders, 1986) measuring the extent to which time is experienced as passing quickly (fast tempo). Findings revealed that the correlates (including creativity and fast tempo) did not increase in frequency at statistically significant levels as individuals moved from early to middle to late adolescents. While not statistically significant, mean scores for creativity and fast tempo did increase across the three samples, indicating

that chronological age may play a yet to be determined role in the emergence of the correlates.

Walling (1987) studied the relationships between creativity and time perception as measured by clock time estimates and the Kirton's Adaption-Innovation Inventory (KAI)(Kirton, 1976), an instrument which measures problem solving characteristics along a continuum ranging from adaptors to innovators. Adaptors are considered to work within established procedures and seek group consensus, innovators focus on new angles by restructuring problem solving approaches. The sample consisted of 22 college students. Significant correlations were found between time perception and the Originality subscale of the KAI score ($p < .01$) and between time perception and the total KAI score ($p < .05$). Therefore, the results of this study indicated that the more original or innovative an individual is the more likely they are to perceive time as moving quickly.

Kurz (1965) examined the relationship between time perception and ability to delay gratification of impulses. In order to test the relationships between these variables, the author administered The Time Metaphor Test and the Harrower Multiple-Choice Rorschach Test (HMCR) (Harrower & Steiner, 1945) to 46 female undergraduate psychology students. The HMCR consists of 10 ink blots with 30 possible responses for each ink blot. Subjects were instructed to pick 3 items out of the 30 which they thought

best described the ink blot. Subjects receive 1 point for each response that indicated human action (M score). The higher score, the more a individual is thought to be able to delay immediate impulse gratification, a lower score is associated with less ability to control impulses. High M scores have also been associated with creativity or imagination.

Findings revealed a positive correlation between M scores and the Vectorial Cluster of the Time Metaphor Test (r = .52, p < .001). Conversely, there was a negative correlation between M scores and the Oceanic Cluster of the Time Metaphor Test (r = -.41, p < .01). There was a .00 correlation between M scores and the Humanistic Cluster of the Time Metaphor Test. It should be noted that a positive correlation indicates that high HMCR subjects preferred to describe time by using static or slow moving images, while subjects receiving relatively low HMCR scores tended to select images indicating rapid movement. The author concluded that for the high M subjects, the rapid passage of time was unimportant in the eventual gratification of needs and find it satisfying to think of time as stable or moving slowly. The low M subject prefers to conceptualize time as passing rapidly in order to be released from discomfort quickly.

Yonge (1975) studied time experience, self-actualization values and creativity in 80 subjects enrolled

educational psychology course. Three tests were administered to the subjects over a 3 week period. Tests included the Inventory of Temporal Experiences (ITE) (Yonge, 1973); the Adjective Check List (ACL) (Gough & Heilbrun, 1965), at test of creativity; and the Personal Orientation Inventory (POI) (Shostrom, 1968). Findings revealed that scores on the ACL were significantly correlated with the Human subscale of the ITE ($p = 44$, $r < .01$). The human subscale of the ITE measures preference for time described as new, creative, freedom, self-realization, or a broadening of horizons.

Summary

The fields of leadership and nursing share common and overlapping interests. Recognizing the complimentary aspects of both fields, studies reframing leadership theory within a Rogerian perspective have been called for by nursing scholars (Alligood, 1989; Gueldner, 1989; Rawnsley & Evans, 1992). Based upon assumptions described in both the Transformational Transactional Leadership model proposed by Bass (1990) and the conceptual model described by Martha Rogers (1970, 1980, 1986, 1989, 1990, 1992) it is proposed that leadership characteristics might be associated with creativity, power as knowing and individual time perspective.

In this chapter, studies conceptually related to the variables were discussed with particular attention being paid to relevant studies conducted from a Rogerian perspective. In addition, research considered to be seminal in nature, but conducted outside of the Rogerian model, was also presented. Chapter III, which follows, describes the methods utilized including the sample and institutional characteristics, instruments, data collection procedures, protection of human subjects and data analysis procedures.

Chapter III

METHODS

Introduction

This descriptive correlational study is designed to investigate the degree to which variance on preference for leadership style can be explained by the Rogerian correlates of creativity, power as knowing, and time experience. In this chapter the methods are described including the sample and institutional characteristics, instruments, data collection procedures, protection of human subjects and data analysis.

Sample

The sample consisted of four hundred and thirty-nine (439) full-time, masters and/or doctoral prepared nursing faculty from National League for Nursing Accredited baccalaureate and higher degree program. Liderman, Gold, and Merenda (1980) recommend that "*the sample size in multiple regression problems should be at least 100 or at least 20 times the number of variables, which ever is larger*" (p. 119). A desirable sample of 200 will yield a ratio of 40 subjects per variable (leadership style, creativity, power as knowing, and time experience).

Therefore, a sample of 439 was of sufficient size to minimize Type I and Type II errors.

Individuals from 59 schools, representing twenty-seven (27) states and 1 United States territory returned the survey instruments. Twenty-two (22) of these schools were classified as private/religious, 8 private/secular, and 29 were classified as public institutions. Fifty-eight (58) of schools offered baccalaureate degrees, 26 offered baccalaureate and higher degrees, 1 school did not offer a baccalaureate degree but did offer a graduate program in nursing.

Of the 1004 packets sent, 48 were returned undeliverable with no forwarding address and 53 others did not meet sample inclusion criteria. In addition, 14 individuals returned the completed questionnaires after the data was analyzed and 450 faculty members did not respond. This produced an accessible population of 903 (1004 initial mailing - 48 undeliverable - 53 ineligible = 903 accessible population). The total number of usable surveys returned was 439, yielding a response rate of 48.61% (439 completed surveys ÷ 903 accessible population = 48.61% response rate).

Babbie (1990) considers a response rate of 50% to be adequate. Babbie considers this to be a "rough guide" and suggests that a demonstrated lack of response bias is far more important than a high response rate (p. 182).

While a systematic effort to determine lack of response bias was not incorporated into the design of this study, eleven (11) faculty members either wrote or telephoned to express interest in the study but due to time constraints were unable to participate. Therefore, the length of time needed to complete the instruments may have been a significant deterrent to participation in the study and may have biased the pool of respondents.

Demographic Information

Data related to the demographic characteristics of nursing faculty participating in this study are located in Table 1. Relative to age, of the 439 faculty who returned competed survey instruments the mean, median and mode ages fall within the 45 - 49 year age range (Mean = 47.8, *SD* = 7.59). Four hundred and twenty six (426) or 97% of the respondents were female.

Masters level and/or doctoral level educational preparation was required for participation in the study. Twenty and three-tenths percent (20.3%) of the nursing faculty indicated that their initial education was a diploma in nursing. Four and one-tenth percent (4.1%) held associate degrees in nursing; 47.6% held baccalaureate degrees in nursing; 77.4% held a masters degree in nursing; 48.7% held a doctoral degree; and 12.1% indicated that they held other degrees. Percentages add to more than 100% as some faculty held two or more degrees.

Table 1

Demographic Characteristics of Respondents

Characteristic	*n*	%	*M*	*SD*	Min	Max
Age			47.8	7.59	29	70
Less than 40	63	14.6				
40 - 44	91	21.1				
45 - 49	105	24.3				
50 - 54	74	17.1				
55 - 59	69	16.0				
60 and older	30	6.9				
Total	432	100.0				
Gender						
Female	426	97.0				
Male	13	3.0				
Total	439	100.0				
Earned degrees						
Diploma	89	20.3				
ADN	18	4.1				
BSN	209	47.6				
MSN	340	77.4				
Doctorate	214	48.7				
Other	53	12.1				
Total	439	210.3				
Highest degree earned						
Masters	225	51.3				
Doctorate	214	48.7				
Total	439	100.0				
Years as a licensed RN			25.3	7.78	8	47
15 or less	52	12.0				
16 - 20	82	18.9				
21 - 25	100	23.1				
26 - 30	83	19.2				
31 - 35	71	16.4				
36 or more	45	10.4				
Total	433	100.0				
Years as nursing educator			15.2	7.94	1	36
1 - 5	55	12.6				
6 - 10	86	19.8				
11 - 15	91	20.9				
16 - 20	105	24.1				
21 - 25	52	12.0				
26 or more	46	10.6				
Total	435	100.0				

Table 1 continues

Characteristic	*n*	%	*M*	*SD*	Min	Max
Years in present position			9.0	6.58	1	31
3 or less	109	25.1				
4 - 6	88	20.3				
7 - 9	65	15.0				
10 - 15	93	21.4				
16 or more	79	18.2				
Total	434	100.0				
Faculty rank						
Instructor	51	11.7				
Assistant professor	201	46.2				
Associate professor	130	29.9				
Full professor	53	12.2				
Total	435	100.0				
Area of specialization						
Mental health	92	21.4				
Pediatrics	77	17.9				
Family	12	2.8				
Community	53	12.4				
Administration	21	4.9				
Surgical	59	13.8				
Ethics	2	.5				
Management	5	1.2				
Gerontology	28	6.5				
Adult	56	13.1				
Nutrition	1	.2				
Nurse practitioner	6	1.4				
Critical care	17	4.0				
Total	429	100.0				
Years as nursing educ. administrator			5.8	5.05	1	33
1	19	9.7				
2 - 4	84	42.9				
5 - 9	61	31.1				
10 or more	32	16.3				
Total	196	100.0				
Think more about future than past?						
Much more future	191	43.7				
Somewhat more future	99	22.7				
Equal: present, future	62	14.2				
Present dominates	81	18.5				
Somewhat more past	3	.7				
Much more past	1	.2				
Total	437	100.0				

Two hundred and twenty-five (225) faculty or 51.3% indicated that their highest degree was a masters in nursing, 214 faculty or 48.7% indicated that their highest degree was a doctorate. The mean number of years licensed as a Registered Nurse was 25.3, *SD* = 7.78 years. Faculty served a mean of 15.2 (*SD* = 7.94) years as nursing educators and a mean of 9 years (*SD* = 6.58) in their present position. Eleven and seven-tenths percent (11.7%) held instructor rank; 46.3% assistant professor; 29.9% associate professor; and 12.2% held full professor rank.

Faculty were asked to write-in their area of specialization on the demographic form. Twenty-one and four-tenths percent (21.4%) of the faculty reported that their area of specialization was mental health; 17.9% pediatrics; 13.8% surgical nursing; 13.1% adult health; 12.4% community health; 6.5% in gerontology. Each of the following areas of specialization were cited by fewer than five percent (5%) of the faculty: family health; administration; ethics; management; nutrition; nurse practitioner; and critical care.

One hundred and ninety-six (196) or 44% of the total number of faculty returning completed surveys indicated some administrative experience in nursing education. The mean number of years was 5.8 years, *SD* = 5.05.

The last question on the demographic form, taken from the Time Opinion Survey (Kuhlen & Monge, 1968), pertained to

a question about the faculty members perception of time experience. Of the four hundred and thirty-seven (437) faculty who responded to this question 66.4% of the faculty indicated that they preferred "much more thinking about the future than the past" or "somewhat more thinking about the future rather than the past". Nine-tenths of one percent (0.9%) preferred "somewhat more thinking about the past than the future" or "much more thinking about the past rather than the future".

To summarize, the typical nursing faculty member participating in this study was a 45 to 50 year old female equally likely to have an earned masters degree in nursing or a doctoral degree as their most advanced degree. This faculty member was licensed as a Registered Nurse for a duration of about 25 years and served as an nursing educator for about 15 years. Most of the time spent in education, about 9 years, would have been in their current position where the faculty member held assistant professor rank.

Institutional Characteristics

Data related to the characteristics of the institutions represent are located in Table 2. Forty-three and seven-tenths percent (43.7%) of the faculty held positions at a private colleges or universities, 56.3% of the faculty were employed by public institutions. Fifteen and two tenths percent (15.2%) of the respondents indicated that faculty at

Table 2

Characteristics of Institutions Represented

Characteristic	*n*	%	*M*	*SD*	Min	Max
Public or private school						
Private	192	43.7				
Public	247	56.3				
Total	439	100.0				
Faculty organized in collective bargaining unit						
Yes	66	15.2				
No	369	84.8				
Total	435	100.0				
Approximate total enrollment			8613.4	13986.49	80	59000
500 or fewer	98	24.2				
501 - 1,000	44	10.9				
1,001 - 2,000	47	11.6				
2,001 - 5,000	81	20.0				
5,001 - 10,000	42	10.4				
> 10,001	93	23.0				
Total	405	100.0				
Number of fulltime nursing faculty			29.4	30.46	2	350
10 or fewer	46	11.0				
11 - 15	106	25.2				
16 - 25	97	23.1				
26 - 50	124	29.5				
51 or more	47	11.2				
Total	420	100.0				
Nursing programs offered						
Associate	41	9.3				
Baccalaureate	402	91.6				
Master's	314	71.5				
Doctoral	138	31.4				
Other	36	8.2				
Total	439	212.1				

their institution were organized in a collective bargaining unit, 84.8% indicated that faculty at their institution were not organized in a collective unit.

Thirty-five and one tenth percent (35.1%) of the faculty estimated total institutional enrollment to be 1,000 or fewer students. Thirty-one and six-tenths percent (31.6) estimated total institutional enrollment to between 1,000 and 5,000 students. Thirty-three and four-tenths percent (33.4%) indicated that total institutional enrollments in excess of 5,000 students.

Regarding faculty size of the school or department housing the faculty member, the mean number of full-time nursing faculty was 29.4, *SD* = 30.46. Thirty-six and two tenths percent (36.2%) indicated full-time faculty size of 15 or fewer; 52.6% between 16 and 50 full-time faculty; 11.2% responded that their school or department consisted of 51 or more full-time faculty.

Nine and three-tenths percent (9.3%) of the faculty indicated that their schools offer an associates degree in nursing; 91.6% baccalaureate degrees; 71.5% masters degrees; 31.4% doctoral; and 8.2% indicated that their school offered some other type of degree. Percentages add to more than 100% as the representative schools may offer more than one degree.

Comparative data was obtained from a national study of member and non-member agencies by the American Association

of Colleges of Nursing (1993). Faculty characteristics found in this study, including educational preparation, rank and gender; and type of school parallel those found by AACN (see Table 3).

In summary, representative schools were nearly as likely to be private as there were to be publicly held institutions. The majority (84.8%) of the faculty belonged to institutions that were not part of a collective bargaining unit. Approximately half of the faculty belonged to institutions at the extreme ends of the enrollment spectrum (24.2% less than 500; 23.0% more than 10,000 students). Most schools offered baccalaureate (91.6%) and/or master's level nursing degrees (71.5%). Thirty-one percent (31%) of the representative schools offered a doctoral degree in nursing. Comparative data on selected demographic variables reveals that the sample population and institutional profile closely approximates that found by AACN (1993).

Table 3

Faculty and Institutional Data Comparisons

	AACN*	This Study
Highest Degree (N = 9,518)		
Doctoral	43.6%	48.7%
Nondoctoral	56.4%	51.3%
Rank (N = 9,518)		
Professor	9.0%	11.7%
Assoc. Prof.	25.7%	29.9%
Assist. Prof.	41.3%	46.2%
Instructor	17.1%	11.7%
Other/NR	6.9%	0.5%
Gender (N = 9,210)		
Female	96.9%	97.0%
Male	3.1%	3.0%
Type of School (N = 9,518)		
Public	62.4%	56.3%
Private	36.6%	43.7%

Source: American Association of Colleges of Nursing, 1993

* Includes responses from 380 American Association of College of Nursing member and 113 nonmember baccalaureate and higher degree programs.

Instruments

The instruments used include the Multifactor Leadership Questionnaire 5X--Self Rater form (Bass & Avolio, 1991), The Revised Art Scale (Welsh, 1980), Power as Knowing Participation in Change Test (PKPCT) (Barrett, 1987), and the Time Metaphor Test (Knapp & Garbutt, 1958). Overviews of each instrument is presented here.

Multifactor Leadership Questionnaire (MLQ)

The Multifactor Leadership Questionnaire 5X--Self Rater form, developed by Bass and Avolio (1991) (see Appendix A), was used to measure leadership styles of nurse educators. The MLQ discriminates between transactional, transformational and non-leadership styles.

Transactional leadership is considered to be associated with leadership styles describing contingent reward and management-by-exception. Transformational leadership is consistent with factors describing charisma, inspiration, intellectual stimulation, and individual consideration. Non-leadership is described as laissez-faire leadership style (Bass & Avolio, 1990).

Extra effort, effectiveness, and satisfaction are three outcomes associated with leadership styles which are also measured by the MLQ-5X. Extra effort reflects the extent to which coworkers or followers exhibit extra effort because of the influence that the leader has had on them.

Effectiveness is associated with meeting the job-related needs of followers, representing followers' needs to higher-level managers, contributing to organizational effectiveness, and performance by the leaders' work group. Satisfaction reflects how satisfied both leaders and followers are with the leader (Bass & Avolio, 1990).

The MLQ-5X (Bass & Avolio, 1991) consists of 90 statements pertaining to leadership. There are two forms. The Self-rater form is written in the first person and is completed by the "leader", in this instance the faculty member. The Rater Form, written in second person, can completed by either supervisors, supervisees or peers. Except for first person or second person focus, they parallel one another with regard to leadership behavior content.

The frequency of the stated behavior is rated on a five point Likert type scale ranging from 0 to 4. The rating scale for the 78 leadership items is 0 = not at all; 4 = frequently, if not always. The extra effort score can also be calculated on a scale consisting of 3 items with scores ranging from 0 = not at all to 4 = frequently, if not always. An effectiveness scale has 4 items which are rated 0 = not effective to 4 = extremely effective; and 2 items related to satisfaction and are ranked 0 = Very dissatisfied to 4 = Very satisfied. Three (3) additional biographical

items are also included in the test. The instrument takes approximately 20 minutes to complete.

The MLQ-5X (Bass & Avolio, 1991) assesses four (4) transformational leadership factors (charisma, idealized influence, inspiration, intellectual stimulation and individual consideration), two (2) transactional leadership factors (contingent reward and management-by-exception), one nonleadership factor (Laissez-Faire), and three outcome factors (satisfaction with the leader, individual group effectiveness, and extra effort by followers). The number of items per scale on the MLQ 5X--Self Rater form are as follows:

Transformational Leadership:

- Charismatic (8 items);
- Idealized Influence (10 items);
- Inspirational (10 items);
- Intellectual Stimulation (10 items);
- Individual Consideration (9);

Transactional Leadership:

- Contingent Reward (9 items);
- Management-by-Exception - Active (7 items);
- Management-by-Exception - Passive (7 items);

Nonleadership:

- Laissez-Faire (8 items);

Outcome Factors:

Satisfaction with the Leader (2 items);

Individual and Group Effectiveness (4 items);

Extra Effort by Followers (3 items)

Items representative of each factor are presented in Appendix B.

Scoring

Individual ratings are summed and averaged for each of the seven factors. Average scores for each factor range from 0 to 4. A low score indicates that a leader's behavior is inconsistent with the description of the factor. A high score indicates that the leader's behavior is perceived as consistent with the factor (Bass & Avolio, 1990). Norms for percentiles for each of the factors on the Self, Supervisor, Supervisee, and Peer Rating Forms are available from Bass and Avolio (1990). The scoring key for the MLQ Self-Rater 5X form can be found in Appendix C.

Reliability

Bass and Avolio (1990) reported α reliability coefficients for each of the factors currently used in the MLQ. Using a sample of 1,006 followers rating 251 business and industrial leaders, α coefficients ranged from $\alpha = .60$ to $\alpha = .92$ on the Self-Rating form. Test-retest reliability over a six month period was also computed using a 193 followers and 33 middle to upper level managers employed by

a Fortune 500 firm. Test-retest reliabilities ranged from .44 to .74 for the Self-rating form. Internal reliability scores and along with six month test-retest reliability scores for all factors are reported in Table 4.

Dunham and Klafehn (1990) administered the MLQ to a group of 80 nursing service executives. A test of halves was shown to be statistically insignificant, suggesting evidence of internal consistency of the MLQ.

Yammarino and Bass (1990), utilizing a sample of 186 Naval officers and 793 subordinates, obtained Cronbach's α scores ranging from .63 to .94 on the MLQ including: charisma = .94, individual consideration = .86, intellectual stimulation = .88, inspirational leadership = .82, contingent rewards = .91, active management-by-exception = .71, passive management-by-exception = .59, Laissez-faire = .63, extra effort = .81, effectiveness = .89 and satisfaction = .92. Similar results were obtained by Evans (1992).

Hoover (1987) used the MLQ to survey 151 headmasters and subordinates in public and private secondary schools. The coefficient α on factor I (charisma) was .95, demonstrating high internal consistancy reliability on this factor.

In a study of 1,006 subjects, Bass and Avolio (1990) noted that there is a tendency for self-raters to inflate their ratings (towards transformational leadership) in

Table 4

Internal Consistancy Reliability Coefficients and Six-Month Test-Retest Reliabilites for the Multifactor Leadership Questionnaire (MLQ) Self-Rater Form

Factors	Internal Consistancy Reliability Coefficient (N = 251)	Six Month Test Retest Reliability Coefficient (N = 33)
Charisma (CH)	.83	.60
Inspiration (IL)	.60	.45
Intellectual Stimulation (IS)	.72	.61
Individual Consideration (IC)	.71	.70
Contingent Reward (CR)	.82	.44
Management-by-Exception (MBE)	.62	.74
Laissez-Faire (LF)	.60	.73
Extra Effort (EE)	.73	.44
Effectiveness (EFF)	.67	.56
Satisfaction (SAT)	.92	.59

Source: Bass and Avolio (1990, pp. 22-23)

comparison to raters. This is consistent with results obtain by Bass and Yammarino (1989), Gottlieb (1990), and McDaniel and Wolf (1992).

Validity

Evidence of content validity (Bass, 1985) is seen in the manner in which the MLQ was developed. Bass constructed a 142 item list of items which were judged by 11 graduate MBA students. The questions were derived from a pilot study of 70 executives and from a literature review. Judges were given a detailed definition of transactional and transformational leadership and sorted the 142 items into one of three categories: transformational, transactional, and "can't say". Seventy-three 73 questions survived this procedure (p. 198).

Bass (1985) then administered the questionnaire to 104 U.S. Army Officers. Split-half reliability for transactional and transformational summation scores were .80 and .86 respectively. However, transformational scores correlated with transactional scores (r = .72). Factor analysis was done to categorize the items. Seven factors emerged with eigenvalues above 1.0 and accounted for 85.9% of the variance. Two factors were eliminated when additional subjects were added and eigenvalues for those factors fell below 1.0. The five remaining factors included charismatic leadership, contingent reward, individualized consideration, management-by-exception, and intellectual

stimulation. In subsequent investigations the MLQ has been refined to include a separate transformational leadership scale measuring inspirational leadership and non-leader, currently identified as Laissez-faire (Bass & Avolio, 1990). Management-by-exception was also refined to include both active and passive dimensions.

Further evidence of content validity is apparent in a study conducted by Hoover (1987). Hoover used the MLQ to survey 151 headmasters and subordinates in public and private secondary schools and analyzed principle components of the MLQ using the oblique rotation technique. Loadings on factor I (transformational leadership) were reported as follows: Charisma = .67; Individual Consideration = .71; Intellectual Stimulation = .54; Contingent Reward = .07; and Management-by-Exception = -.63. Loadings on factor II (transactional leadership) were: Charisma = .20; Individual Consideration = .19; Intellectual Stimulation -.17; Contingent Reward = .77; and Management-by-Exception = .38. These findings suggest that items on the MLQ separate transformational leadership from transactional leadership behaviors.

Yammarino and Bass (1990), utilizing a sample of 186 Naval officers and 793 subordinates, used multiple levels of analysis to identify relationships between TA/TF leadership styles and selected variables. Positive correlations were found to exist between the Transformational leadership and

the Strong Interest Inventory, measures of verbal and numerical intelligence, biographical inventories, and measures of performance at the Academy (including cumulative fitness reports and recommendations for early promotion). Transactional leadership correlated more poorly with positive supervisor appraisal. Laissez-Faire leadership style correlated negatively with the variables.

The Revised Art Scale (RAS)

The Revised Art Scale (see Appendix D) was used to measure creativity in nurse educators. The instrument, adapted form the Welsh Figure Preference Test (Welsh, 1980), is designed to measure preference for complexity and has been associated with creativity.

The original work, the Welsh Figure Preference Test (Welsh, 1947), was initially intended for the detection and diagnosis of psychiatric abnormality. The test consisted of 200 ruled and free-hand figures on 3 x 5 cards. The sample population consisted of one hundred and forty-three subjects included six artists.

Factor analysis showed that two factors accounted for most of the variance in scores: an acceptance-rejection factor; and a second bipolar factor, orthogonal to the first, whose poles seemed to be simplicity-symmetry and complexity-asymmetry. Additional analysis of the data revealed that individuals with high positive scores tended

to be conservative and conventional while high negatives tended to be dissident, cynical, somewhat eccentric and deviant (Welsh, 1947).

Following-up on this apparent correlation, Barron and Welsh (1952) developed the Barron-Welsh Art Scale. This instrument expanded the original tool from 200 to 400 items in an effort to distinguish artists from non-artists. Out of these 400 items, sixty-five items emerged as having the greatest discrimination in identifying artists and non-artists. Forty items were disliked by artists significantly more often than non-artists ($p < .01$) and twenty-five items like by artists significantly more often ($p < .05$). The forty items disliked by artists were of the simple-symmetrical sort, almost all of the items they liked by artists were significantly more often were complex-symmetrical (Barron & Welsh, 1952). Subsequently, three items were eliminated. Barron-Welsh Art Scale is currently comprised of 62 items; 24 like and 38 dislike (Welsh, 1980).

Because of statistical problems associated with an unbalanced scale (24 like, 38 dislike), Welsh (1959) revised the scale into two equally proportioned categories. This scale, the Revised Art Scale, contains 30 like and 30 dislike items and is essentially an alternate version of the Barron-Welsh Art Scale (Welsh, 1952; F. Barron, personal communication, March 10, 1993). Correlation between the

Barron-Welsh Art Scale and the Revised Art Scale was found to be r = .96 (Welsh, 1969).

The RAS is administered as an 86 item test with scoring keys for extracting either the Barron-Welsh Art Scale score or the Revised Art Scale score. Given the high correlation between the two scales and statistical advantages associated with an equally proportioned bipolar scale, the Revised Art Scale was utilized in this study.

Scoring

The Revised Scale consists of sixty (60) items which distinguish individual preference for complexity. Thirty (30) items are keyed "like" and thirty (30) items are keyed "don't like". The scoring key (see Appendix E) indicates the modal response given by the artist group. The total score on the RAS is the number of "like" and "don't like" responses that correspond to the keyed responses. The score ranges from 0 to 60 with lower scores indicating a perceptual preference for simplicity. Higher scores indicate a perceptual preference for complexity.

Reliability

Barron and Welsh (1952) administered the Barron-Welsh Art Scale to a group of 80 non-artist subjects and obtain a split-half reliability of .96. Test-retest reliability of the Revised Art Scale was determined by retesting a sample

of 32 gifted adolescents after a one year interval. A correlation of .70 ($p < .001$) was obtained (Welsh, 1980).

Bray (1989) studied the relationships of creativity, time experience, and mystical experience in 193 college students. The mean for the RAS was 24.32 (SD = 12.05) with a range from 2 to 53. The observed coefficient α of .92 compares favorably with the .96 coefficient by Barron and Welsh (1952) obtained on the Barron-Welsh Art Scale.

Validity

Barron and Welsh (1952) administered the Barron-Welsh Art Scale to 37 artists and 150 (75 male and 75 females) non-artists covering a wide range of age, education, occupation, and geographical locations. Mean scores for the six-five item scale were 40.25 for artists and 16.9 for non-artists (CR = = 8.46, $p < .0001$). A cross-validation was conducted using a separate sample of 30 artists and 30 non-artists, effectively discriminated between the groups. Mean scores for this second group were 39.07 for artists and 18.37 for non-artists (CR = 3.97, $p < .001$).

Rosen (1955) attempted to discover if scores on the Barron-Welsh Art scale correlated with the merit of the art work produced by the students. The Barron-Welsh Art scale was administered to forty-four art students (22 in the first year of work and to 22 advanced level students) and 16 faculty (8 art faculty and 8 faculty members in other departments matched by age and gender). There were no

significant correlations between artist groups (t = .14). However, there were significant differences between the artists and non-artists (t = 3.04).

Eisenman (1969) studied creativity in 302 undergraduate students. Three tests were administered to the students including the Barron-Welsh Art, Eisenman's polygons for complexity-simplicity preferences (Eisenman & Robinson, 1967), and expressed uses of three common objects (EUTCO). The EUTCO measures originality (infrequency of responses, 1% or less among all responses) and fluency (total number of valid responses). Findings revealed significant correlations between the Barron-Welsh Art Scale and complexity, r = .55; originality score, r = .38; and fluency score, r = .27 (p < .001 for all correlations).

Power as Knowing Participation in Change Test (PKPCT)

The Power as Knowing Participation in Change Test - Version II (see Appendix F), developed from Rogers's conceptual system, was constructed by Barrett (1983) to identify pattern manifestations of power as knowing participation in change. According to Barrett (1983), depending on how human beings knowingly participate in change, they actualize some potentials rather than others and therefore, share in the creation of themselves and their environment.

In initial development of the tool (1983), Barrett tested four dimensions of power across three contexts. Thus, the original PKPCT contained a total of 12 scales. The four dimensions of power subscales included in the PKPCT included awareness; choices; freedom to act intentionally, and involvement in creating change. These human field patterns were each framed within the contexts of "myself", "family", and "occupation".

After administering the tool to a population of 625 subjects from diverse ages, educational and educational backgrounds, congruence coefficients of .99 provided evidence that power generalized across contexts. That is, "subjects did not respond in a substantially different manner when the concept was considered in relation to indicators of human and environmental fields" (Barrett, 1986, p. 178). Subsequently, the instrument was revised, eliminating references to context (myself, family and occupation). This instrument, used in this study, contains four (4) subscales and is known as the Power as Knowing Participation in Change Test - Version II.

Scoring

The PKPCT consists of 52 bipolar adjectives divided into four subscales representing awareness, choices, freedom to act intentionally, and involvement in creating change. The instrument uses a semantic differential technique with items rated on a scale from 1 to 7 with lower numbers

representing less power and higher numbers representing greater power. Because the last item of each scale is a retest item, 48 items (12 per scale) were used in scoring the tool. As Barrett (1983) suggested that scale score be summed for each of the power concepts of awareness, choices, freedom to act intentionally, and involvement in creating change, this procedure was followed in this study.

The power concept instrument utilizes reverse scoring on some of the bipolar scales. The scoring key for the power concept instrument, found in Appendix G, describes the methodology for this procedure.

Reliability

Barrett (1983) conducted a pilot study using a volunteer, national sample of men and women (n= 267 with 53% return rate) representing various age groups, marital, educational, and occupational backgrounds. Reliability of the PKPCT is reported as the variances of the factor scores obtained for the first factor when all data were merged into a single factor analysis. These variances ranged from .55 to .99 including: .55 for awareness in relation to occupation, .58 for choices in relation to myself, .74 for freedom to act intentionally in relations with family, .77 for involvement in creating changes in relation to myself, .93 for creating changes in relations with family, .99 for involvement in creating changes in relations with family.

In a final study of 625 subjects, diverse in terms of age, marital status, city size, geographical residence, occupations and educational backgrounds, Barrett, (1983) determined α coefficients for the PKPCT subscales to be: .63 for awareness in relation to occupation; .75 for choices in relation to myself; .95 for freedom to act intentionally in relations with family, and .99 for involvement in creating changes in relations with family.

Barrett (1983) analyzed test-retest reliability of each subscale using the last scale for each concept-context combination. The coefficients of stability ranged from .70 to .78.

In a study of 326 staff registered nurses, Trangenstein (1988) examined relationships of power to job diversity and job involvement. Analysis for test-retest reliability (using the last item on each of the content scales) yield the following coefficients of stability: .75 for awareness; .80 for choices; .72 for freedom to act intentionally; and .68 for involvement in creating change. These findings are consistent with test-retest coefficients of stability found by Barrett (1983).

Bramlett (1990) administered the PKPCT, modified for administration using an interview technique, to 81 independently living, healthy adults 60 years or older. Three separate sessions, spanning a five week period were yielded one pre-test and two retests. Correlations between

the pre-test and two retests were highly significant ranging from r = .377 to .897 with probability levels ranging from p < .0008 to .0001. Correlations of each subscale on the PKPCT were shown to have consistently high correlation with the total score (r = .843 to .936, p = .0001).

Rizzo (1990), utilized Barrett's (1983) PKPCT in a correlational study of life satisfaction, purpose in life, and power in 64 persons over age 65. Alpha coefficients for the four subscales were: awareness = .87; choices = .81; freedom to act intentionally = .87; involvement in creating change = .87. Coefficient for the total α power measure (48 items) was .94. Similar results were obtained by Bramlett (1990), Caroselli-Dervan (1991), Rapacz (1991), Rizzo (1990), Smith (1992), and Trangenstein (1988).

Validity

Barrett (1983) utilized two sets of judges to establish face validity of the instrument. The first group of five judges held earned doctorates, held professorial rank and were familiar with the Rogerian conceptual system. The second group consisted of four judges whom had expertise in psychometrics and were also familiar with the Rogerian conceptual system.

In the pilot study (N = 267), 288 variables (4 concepts x 3 contexts x 24 scales) were strung out in a single matrix and factor analyzed utilizing principle factors with varimax rotation. Three factors emerged with eigenvalues greater

than 1.0. The first factor accounted for 42% of the variance; the second factor accounted for 5% of the variance; the third factor accounted for 4% of the variance. Simple structure was not obtained and a subsequent oblique rotation did not increase the clarity of the factors (Barrett, 1983).

Similar factor loadings were obtained by Barrett (1983), n = 625 and Trangenstein (1988), n = 326. Barrett (1983) suggests that these results indicate that factors are related aspects of one construct rather than comprising relatively distinct dimensions of power.

Time Metaphor Test (TMT)

The Time Metaphor Test (see Appendix H), developed by Knapp and Garbutt (1958), was used to measure time experience of nurse educators. The TMT consists of poetic allusions to time and was initially developed to discriminate between achievement and time imagery.

In developing the TMT, Knapp and Garbutt (1958) collected 40 metaphors from anthologies and other sources, and had a "preliminary" group of students (*n* not reported) rate the metaphors on five (5) point scale. Metaphors which were universally accepted as appropriate and metaphors which were most frequently judged inappropriate were rejected. Twenty-five (25) metaphors whose average scores for

appropriateness lay within a range of 1.5 points were retained.

These twenty-five (25) images were then administered to the original 73 students. A factor analysis of metaphors yielded two factors. When the metaphors were plotted on the coordinates representing the two factors, three distinct patterns emerged including the Dynamic-Hasty Cluster, presently called the Vectorial Cluster; Naturalistic-Passive Cluster, presently called the Oceanic Cluster; and the Humanistic Cluster (see Appendix I).

The seven (7) metaphors in the Vectorial Cluster had substantial positive loadings on the first factor and were interpreted as representing a "Newtonian sense of time, one defined in terms of an absolute, impersonal, constant, and directional rate of change in the universe" (Knapp & Garbutt, 1958).

The Oceanic and consists of seven (7) metaphors with negative loadings on both factors. The cluster was described by Knapp and Garbutt (1958) as having "images drawn from nature in which movement is either totally absent or but vaguely suggested". This cluster is quite different in its ideological orientation from the first cluster and is conspicuous for its "lack of any suggestion of directionality and the prevailing sense of time as surrounding and encompassing in a passive sense, almost as

though time were an oceanic medium" (Knapp & Garbutt, 1958, p. 433).

The third cluster, the Humanistic Cluster, consists of eight (8) metaphors. These metaphors have positive loadings on the second factor and no substantial positive loadings on the first factor. These metaphors appear to relate images of human figures, human surrogates or human artifacts which imply that "man is the measure of all things". Their precise significance is yet to be determined (Knapp & Garbutt, 1958, p. 434).

All but three (3) of the metaphors are contained in the above clusters. These three (3) metaphors occupied intermediate spaces between the clusters and are not categorized.

Allen (1988), Bray (1989), Ference (1979), and Schmeidler (1964) reported that the metaphor, "a whirligig", was unfamiliar to many subjects. Rawnsley (personal communication, March 5, 1993) suggested that the metaphor be revised to read "a whirligig; a spinning top". This suggestion was incorporated into the tool used for this study.

Scoring

Knapp and Garbutt (1958) instructed their subjects to to place a number one (1) next to 5 phrases that seemed most appropriate. A two (2) was then placed adjacent the next 5 most appropriate phrases and so on until the number five (5)

was placed before the five least appropriate phrases. Wallach and Green (1961) added weights to the metaphors, assigning twenty-five (25) points to the swiftest metaphor and one (1) to the most static metaphor.

Several nursing researchers have subsequently used the TMT and have suggested changes in administering and scoring the test. Rawnsley (1977) and Ference (1979) instructed subjects to choose five metaphors from the list that most clearly state how time seemed to be passing in their life. Rawnsley used weights, assigned to each item by Wallach and Green (1961), and computed each subject's total score by adding the rank number of items. The higher the score, the faster the perception of time. Rawnsley suggests that this methodology is simpler for subjects to complete yet still yields the subject's preference for swift or static metaphors. However, Ference (1979) reported that some subjects had difficulty following the revised instructions and urged that a consistent scoring procedure be used to facilitate future research. Allen (1988) expressed concern relative to potential loss of data.

Allen (1988) suggests that scores for the TMT may not be summative and it may be more revealing to obtain individual scores on each of the three clusters. Because of inconsistencies between Knapp and Garbutt's model and Rogers' models of time and inconsistent use of test scores

(Hastings-Tolsma, 1992) this study followed directions for completing the TMT as revised by Allen (1988).

Participants were instructed to rate each of the 25 metaphors on a 5 point scale (1 = "definitely does not resemble my sense of time" to 5 = "definitely resembles my sense of time"). A score was then be assigned by summing and averaging responses for each cluster. Table 5 summarizes responses in each cluster. The ranges of possible scores for each cluster are: Vectorial 1 to 35 divided by 7, Oceanic 1 to 35 divided by 7; and Humanistic 1 to 40 divided by 8. The three uncategorized metaphors were not be scored or analyzed.

Reliability

Wallach and Green (1961) studied 278 old and young males and females and found a high level agreement among the four groups on Knapp and Garbutt's (1958) ranking of Factor I. A Kendall coefficient of concordance of .95 empirically supported this observation.

Ference's (1979) study of 213 subjects also found a high level of support for this ranking. Ference, following Rawnsley's (1977) procedure had subjects select five (5) of twenty-five metaphors and rank ordered values assigned by Wallach and Green (1961). Since the subjects did not rank each of the 25 items on the test, the Kendall coefficient concordance could not be obtained. However, a Kruder-

Table 5

Metaphor Items Contributing to Each Cluster of the Time Metaphor Test

Cluster	Item Number	Metaphor
Vectorial	2	a whirligig; a spinning top
	7	a fast moving shuttle
	9	a speeding train
	13	a dashing waterfall
	14	a spaceship in flight
	21	a fleeing thief
	25	a galloping horseman
Oceanic	3	a road leading over a hill
	4	budding leaves
	10	a quiet, motionless ocean
	15	wind-driven sand
	17	drifting clouds
	19	a vast expanse of sky
	20	the Rock of Gibraltar
Humanistic	1	a large revolving wheel
	5	an old man with a staff
	8	a winding spool
	11	a burning candle
	16	an old woman spinning
	22	a devouring monster
	23	a tedious song
	24	a string of beads
Uncategorized	6	a bird in flight
	12	a stairway leading upward
	18	marching feet

Adapted from Hastings-Tolsma (1992, p. 46)

Richardson 20 was applied to the scores of the TMT and internal consistancy reliability was determined to be .99.

Allen (1988) used the TMT in study of 181 men and women and computed internal consistancy reliability for each of the three clusters of the TMT using Cronbach's α (n = 181). The α for the Oceanic Cluster was .64, .62 for the Humanistic Cluster and .79 for the Vectorial Cluster. Item to total correlations for the Oceanic Cluster ranged from .21 to .53; .20 to .50 for the Humanistic Cluster; and, .36 to .63 for the Vectorial Cluster, which demonstrated the highest internal consistancy.

Hastings-Tolsma (1992) studied the relationship of diversity of human field pattern to risk-taking and time experience in 173 subjects. Cronbach's α for the clusters were found to be .63 for the Oceanic Cluster, .60 for the Humanistic Cluster, and .83 for the Vectorial Cluster (n = 173).

Bray's (1989) study of 193 college students yielded Cronbach coefficient α of .65 score on the Oceanic Cluster of the TMT. Reliability of the other two clusters was not discussed.

Validity

Evidence of content validity can be found in the manner in which Knapp and Garbutt (1958) developed the TMT. Forty (40) metaphors related to time, collected from anthologies and other sources, were judged on a five (5) point scale.

Metaphors which were universally accepted as appropriate and metaphors which were most frequently judged inappropriate were rejected. Twenty-five (25) metaphors whose average scores for appropriateness lay within a range of 1.5 points were retained.

Rawnsley (1977) postulated that older persons perceive time as passing more swiftly than younger persons. In a study of 108 dying young and older persons, Rawnsley found that although the results were not statistically significant, mean scores were 57.02 for young and 50.66 for older subjects. These results suggest that younger subjects had a preference for swifter metaphors, opposite of the direction hypothesized. Rawnsley's (1977) study supported concurrent validity of the TMT, finding that subjects selecting swift metaphors on the TMT also scored high on the Speed of Time Passing factor of the Time Opinion Survey.

Knapp and Garbutt (1958) postulated that individuals with a high need for achievement would deem time as more than usually precious and therefore, would view time as moving more swiftly. In an study of 73 undergraduate students, the correlation between the TMT and McClelland's (1953) Thematic Appreciation Test (a test of achievement) was determined to be .63 ($p < .01$).

Wallach and Green (1961) administered the TMT to 278 older adults (median age = 72) and to college subjects (median age = 19) of both sexes. Results demonstrated that

young adults tend to consider static metaphors while older persons tend to consider swifter metaphors. Wallach and Green (1961) suggested that the degree of value of time, rather than the level of activity, is a more important determinant of subjective speed of time. Subsequent research by Surwillo (1964), Kuhlen and Monge (1968), and Lynch (1971), supported this observation.

Data Collection

A stratified random sample of 1004 nursing faculty was selected from an institutional list available through the American Association of Colleges of Nursing (AACN). The institutional list consisted of 472 institutions with baccalaureate or higher degree programs, other than Registered Nurse baccalaureate completion programs. A table of random numbers was utilized to assure a random selection of institutions, yielding 1004 faculty from sixty-one (61) schools.

Seltzer and Bass (1989), B.M. Bass (personal communication, March 1, 1993) report that the person who gives the test to the rater does make a difference. If the raters are selected and contacted by the leader (ie. Dean or Chairperson), rather by an independent authority, the ratings are inflated by a consistent amount.

Therefore, once the schools were identified, a computer name/mailing address search was performed by CMG Information

Services, a company specializing in generating faculty mailing lists. Utilizing an August, 1993 American Association of Colleges of Nursing Current List of Membership, mailing lists were screened for individuals listed as Deans and these individuals were eliminated from the mailing list. Telephone calls were placed to those schools that did not hold membership in AACN and where they appeared, deans from those schools were also eliminated from the mailing list. Packets were then mailed directly to nursing faculty in order to minimize bias associated with distribution methodology.

Baker (1985) suggests that in order to achieve response rates of this level, careful attention needs to be paid to the quality of materials, follow-up, and the date materials are sent. Because the academic year runs from late August - early September until May, the ideal time for collecting data from nursing educators is after summer vacation, after classes have begun, and before the holidays (Baker, 1985).

Therefore, mailing labels were prepared with the name and address of each participant in the study and on September 10, 1993 a packet contain the following documents was then mailed to each subject:

1. A cover letter requesting the subject's participation in the study (see Appendix J). The cover letter explains the purpose of the study, how the subjects had been selected, anonymity, lack of penalty, the right to withdraw, the

mechanics for returning the questionnaires, and a telephone number to call to answer any questions about the directions.

2. One copy each of the four questionnaires. These appeared in random order in respective participant packets to minimize response bias. Subjects were be instructed to complete instruments in the order given in the packets. Questionnaires were be coded so that forms can be matched without identifying respondents;

   a. Multifactor Leadership Questionnaire, Form 5X - Self (Bass & Avolio, 1991);
   b. Revised Art Scale (Barron-Welsh, 1980; Welsh, 1963);
   c. Power as Knowing Participation in Change Test - Version II (Barrett, 1983);
   d. Time Metaphor Test (Knapp & Garbutt, 1958)

3. A demographic form was included in the packet and was be placed last in order of appearance in the packets (Appendix M).

4. A stamped envelope addressed to the investigator for returning completed questionnaires.

5. In order to assure anonymity, a post-card addressed to the investigator with one of the subject's mailing labels affixed was included in the return envelope. Subjects were instructed to return the packet and post-card simultaneously but separately. A separately returned post-card indicated

that the subject returned the questionnaire but not identify participants with the completed materials.

Similar to Babbie's (1986) follow-up recommendations, a follow-up letter (see Appendix K) was sent if questionnaires were not returned within three (3) weeks of the initial mailing. Faculty members who did not return questionnaires within six (6) weeks of the initial mailing were sent a second follow-up letter (see Appendix L).

Protection of Human Subjects

A cover letter was sent to participants assuring anonymity, confidentiality of all data, lack of penalty, right to withdraw, and offer to answer questions (see Appendix J). All questionnaire responses forms were coded so that forms could be matched without identifying the respondent. Willingness to participate in the study was assumed if faculty return completed questionnaires.

Data Analysis

Data collected on the demographic survey, Multifactor Leadership Questionnaire Form 5X--Self Rater (Bass & Avolio, 1991), The Revised Art Scale (Welsh, 1980); Barrett Power As Knowing Participation in Change Test (PKPCT) (Barrett, 1987), and the Time Metaphor Test (TMT) (Knapp & Garbutt, 1958) were be entered into spreadsheet format on an MS-DOS compatible computer.

Statistical results were generated using SPSS-X (1988) and BMDP statistical packages (Dixon, 1988). Pearson's r correlational coefficients, canonical correlations, multiple regression procedures and factor analysis were utilized to identify the patterns of relationships among the variables.

Summary

The methodology utilized in this study was presented in this chapter. In order to perform the statistical procedures needed to examine the relationships among transactional/ transformational leadership styles and creativity, power as knowing, and time perspective it was desirable to obtain a minimal sample size of 200 subjects. A sample size of 439 faculty members was obtained.

One thousand and four (1004) prospective participants were mailed a packet containing the Multifactor Leadership Questionnaire Form 5X--Self Rater (Bass & Avolio, 1991), the Revised Art Scale (Barron & Welsh, 1963), the Power as Knowing Participation in Change Test - Version II (Barrett, 1983), and a demographic form.

Two follow-up mailings occur at three week intervals from the initial mailing on September 10, 1993. Procedures employed which protected both anonymity of the subjects and confidentiality of the data. When instruments were returned data was organized and entered MS-DOS compatible format for analysis by the SPSS-X (1988) and BMDP (Dixon, 1988)

statistical packages. Pearson's r correlational coefficients, canonical correlations, and multiple regression procedures and factor analysis were used to identify the patterns of relationships among the variables.

Chapter IV

RESULTS

Introduction

The results of this study are arranged in two sections. The first section includes explanations of the scoring scheme, descriptions of simple statistics (mean, *SD*, and range of scores), and Cronbach's α scores for the various instruments. In the second section results of tests used to analyze the research questions.

Instruments

Summary data pertaining to the scoring scheme for instruments used to measure leadership, creativity, power as knowing, and time experience are described in this section. Statistical information, including *N*, Mean, *SD*, range of scores and Cronbach's α scores for the various instruments are presented in Table 6. Results are described within the context of their theoretical significance and, where indicated, in relation to comparative data.

Multifactor Leadership Questionnaire (MLQ)

The Multifactor Leadership Questionnaire (Form 5X--Self-Rater) (Bass & Avolio, 1991) was used to measure leadership. Seventy-eight (78) out of ninety (90) statements on the MLQ pertain to leadership and were

Table 6

Instrument Summary Statistics

Scale/ Subscale	*N*	*M*	*SD*	Range	α
Leadership					
Charisma	418	3.17	0.37	2.0 - 4.0	.82
Inspiration	418	3.27	0.42	2.0 - 4.0	.79
Intellectual Stimulation	418	3.18	0.46	1.7 - 4.0	.83
Individualized Consideration	418	3.43	0.39	1.8 - 4.0	.78
Contingent Reward	418	2.78	0.55	0.9 - 3.9	.77
Management-by-Exception	418	1.07	0.44	0.1 - 3.1	.73
Laissez-Faire	418	0.65	0.46	0.0 - 3.3	.64
Creativity	438	23.38	12.71	1 - 58	.94
Power as Knowing					
Awareness	382	71.84	9.14	34 - 84	.92
Choices	382	70.95	8.77	41 - 84	.90
Freedom to Act Intentionally	382	69.70	9.93	24 - 84	.91
Involvement in Creating Change	382	69.86	10.03	19 - 84	.92
Time Experience					
Vectorial	435	3.03	0.93	1 - 5	.82
Oceanic	435	3.23	0.77	1 - 5	.70
Humanistic	435	3.49	0.67	1 - 5	.65

utilized to yield scores on transformational leadership scales. This included scores on four (4) subscales: charisma, inspiration, intellectual stimulation and individualized consideration; transactional leadership which had two (2) subscales: contingent reward and management-by-exception; laissez-faire or non leadership which yields of single score. A more detailed description of the item breakdown on the MLQ is contained in Chapter III.

Twelve (12) additional outcome questions included on the MLQ did not address the research questions and were not included in the analysis. These include three (3) items pertaining to extra effort, four (4) dealing with effectiveness, two (2) with satisfaction, and three (3) questions which were biographical in nature.

In order to be included in the analysis, the faculty member had to complete at least two-thirds of the items in each of the transformational, transactional, and laissez-faire components of the MLQ. Four hundred and eighteen (418) faculty members out of four hundred and thirty-nine (439) faculty members completed at least two-thirds of the subscales items on the MLQ and were included in the analysis, twenty-one (21) individuals did not meet this criteria and were not considered in the analysis.

Once the sample size was determined, individual scores were then summed and averaged for the seven (7) factors (transformational: charisma, inspiration, intellectual

stimulation individualized consideration; transactional: contingent reward and management-by-exception; and laissez-faire). Scores for each factor, with a possible range of 0 - 4, indicate the perceived frequency on that characteristic of leadership style with 0 = "not at all" and 4 = "frequently, if not always".

Scores for the seven (7) subscales (*N* = 418) are located in Table 6. Relative to transformational leadership style subscores: charisma mean score = 3.17, *SD* = 0.37 with scores ranging from 2.0 - 4.0; inspiration mean scores = 3.27, *SD* = .42 with a range from 2 - 4.0; mean score for intellectual stimulation = 3.18, *SD* = 0.46, range = 1.7 - 4.0; individualized consideration mean scores = 3.43, *SD* = .39, range = 1.8 - 4.0. Transactional subscores include: contingent reward mean scores = 2.78, *SD* = 0.55, range 0.9 - 3.9; and management-by-exception mean scores = 1.07, *SD* = 44, range = .01 - 3.1. Laissez-faire mean scores = 0.65; *SD* = 0.46; range = 0.0 - 3.3.

In addition to the above, frequencies were determined for the transformational, transactional and laissez-faire leadership styles scores. Using the highest aggregate mean score of the various subscales as the determining factor, 417 faculty members were consider transformational leaders and 1 faculty member was considered transactional. No faculty members were categorized as laissez-faire. It should be noted that because only one (1) faculty member was

identified as transactional and no faculty members were identified as laissez-faire subsequent data analysis did not include between group comparisons.

Since no studies were located where the MLQ 5X Self--Rater form was administered to nursing faculty, it is not clear how the sample population in this study compares with other groups of nursing faculty. However, for all of the scales that are related to transformational leadership, the means are higher than normative data provided by Bass and Avolio (1990). The mean score on the transformational scales was 3.269 and ranged from 3.17 to 3.43 on a scale of 0 - 4. A score of 2 indicates that the faculty member's preference for leadership style matches the description "sometimes" while a score of 3 indicates that the faculty member's preference for leadership style is "fairly often" like the description. Based upon a normative group of 251 business and industrial executives (Bass & Avolio) faculty scored between the 60th - 70th percentile on charisma, 90 - 99th percentile on inspiration, 80 - 90th percentile on intellectual stimulation, and between the 80 - 90th percentile on individualized consideration.

Similarly, the mean for the two transactional leadership subscales was equal to 1.925, with 2 indicating that the faculty member's preference for leadership style was "sometimes" like the description. These results for the transactional score contingent reward (2.78) were in the

50th percentile of a normative group of 251 business and industrial executives obtained by Bass and Avolio, 1990). However, the mean score for the transactional subscore management-by-exception (1.07) was below the 10th percentile in comparison to the above group norm. The mean for the laissez-faire scale was 0.65 which falls between the "once in a while" and "not at all" descriptors. This result is lower than the averages provided by Bass and Avolio (1990) and falls within the 10th - 20th percentile range of the normative group referred to above.

Revised Art Scale (RAS)

Creativity was measured by the Revised Art Scale (Welsh, 1980). The instrument consists of eighty-six (86) items of which sixty (60) items are keyed on an equally proportioned bipolar pictorial scale. Thirty (30) illustrations are considered to be simple-symmetrical and thirty (30) complex-asymmetrical. The total score on the RAS is the number of "like" and "don't like" responses corresponding to the keyed responses. The score has a possible range of 0 - 60 with higher scores indicating a preference for perceptual complexity, thought to be associated with creativity.

In order to obtain a valid score, faculty members needed to complete a minimum of forty (40) out of the sixty (60) keyed responses. All but one (1) faculty member had

sufficient numbers of keyed responded needed to be included in the analysis, yielding a sample size of 438.

The mean score equaled 23.38, *SD* = 12.71 with a range from 1 - 58. These results are consistent with those obtained by Bray (1987) who observed a mean of 24.32 (*SD* = 12.05; *N* = 47 male and 146 female college students) and Welsh (1980) who observed a mean of 19.3 in a study of seventy-five (75) adult females (*SD* = 12.2).

Power as Knowing Participation in Change Test (PKPCT)

Barrett's (1983) Power as Knowing Participation in Change Test was used to measure faculty member's perception about how they knowingly participate in change. The test consists of fifty-two (52) bipolar adjectives (rated on a scale of 1 - 7) equally distributed across four (4) subscales including choices, freedom to act intentionally, and involvement in creating change. Because the last item of each scale is a retest item, forty-eight (48) items (12 per scale) were used for scoring purposes.

In order to be included in the data analysis participants were required to complete at least two-thirds (2/3's) of the items on all of the subscales. Out of a possible *N* = 439, three hundred and eighty-two (382) faculty members met the above criteria. It is noted that most of these omissions occurred when faculty failed to complete the reverse side of the PKPCT form.

The mean scores for the subscales are presented in Table 6. Results on the various subscales include: awareness - mean score = 71.84, *SD* = 9.14, range 34 - 84; choices - mean = 70.95, *SD* = 8.77; freedom to act intentionally - mean = 69.70, *SD* = 9.93, range = 24 - 84; and involvement in creating change - mean = 69.86, *SD* = 10.93, range = 19 - 84. These results approximate findings obtained in Caroselli-Dervan's (1991) study of eighty-nine (89) female nurse executives in acute care facilities (mean scores ranged from 71.16 to 73.86, *SD* scores range = 6.97 - 7.74).

Time Metaphor Test (TMT)

The Time Metaphor Test (Knapp & Garbutt, 1958) was the instrument used to measure time experience. The test consists of twenty-five (25) metaphors rated on a five (5) point scale (1 = "definitely does not resemble my sense of time" - 5 = "definitely resembles my sense of time"). There are three (3) subscales on the test including vectorial (7 items), oceanic (7 items), and humanistic (8 items). Because the instrument has an uneven number of items in the subscales, the score assigned to each subscore equals the sum of the scores for the subscale divided by the number of items per subscale.

Similar to the other instruments, in order to be included in the analysis the faculty member had to have completed at least two-thirds (2/3's) of the items in each category. Four (4) returns were excluded from the analysis

because they did not meet this criteria yielding a sample size of four hundred and thirty-five (435).

Scores for the subscales are also included on Table 6. The mean for the vectorial cluster = 3.03, *SD* = 0.93, the range was from 1 - 5; oceanic mean = 3.23, *SD* = 0.77, range was 1 - 5; humanistic mean = 3.49, *SD* = .67, range was 1 - 5. In short, all three scores were clustered near the mid points of the subscales. Based on this data, it can be deduced that while faculty failed to show a clear prefrence for one particular cluster, they did demonstrate multiple perferences for time experience. This suggests that complex preference for time experience may be associated with the variety of an individuals time experiences rather than a specific type of time experience per se.

Cronbach's α Coefficient Scores

Cronbach's α coefficient scores were calculated for each of the subscales on the various instrument and are presented in Table 6. The coefficient values, used to test the internal consistency of the instruments, have a theoretical range of 0 - 1.00 with a score of 1.00 indicating that the items in the instrument are measuring the same construct (Polit & Hungler, 1987). Cronbach's α for the MLQ ranged from 0.64 on laissez-faire to 0.83 on intellectual stimulation; the RAS yielded a single score = .94; the PKPCT subscores ranged from .90 on the choices subscale to .92 on awareness; and the TMT subscores had .65

on the humanistic cluster to .82 on the vectorial cluster of the TMT. As described in Chapter III, these findings are consistent with the results found by other researchers. A detailed itemized analysis of the subscales on the various instruments can be found in Appendix N.

Research Questions

Since the focus of this study was descriptive correlational in nature, statistical procedures use to examine the research questions were selected for their ability to analyze the relationship between the variables. These procedures included Pearson's product moment correlations and stepwise multiple regression, which were performed using SPSS-X version 4.0 (1988) and canonical correlations which were calculated using the BMDP statistical package (Dixon, 1988).

In this section, the results of these test are described in relation to each research question. It should be noted that for analysis purposes, leadership subscales are considered the dependent variables and creativity, power as knowing, and time experience subscales are considered to be independent variables. Also, Tables 7 through 21 have been condensed to reflect significant findings. A more complete data set for Tables 7 - 21 can be found in Appendix O.

Research Question 1: What is the relationship between creativity and transactional/transformational leadership styles?

Pearson product moment correlations between the single creativity score and the leadership subscores (see Table 7) revealed a weak (r = .10) but significant (p < .05) correlation between creativity and intellectual stimulation. Creativity also had a weak (r = -.12) but significant correlation (p < .05) with the management-by-exception subscore. However, even though these findings are statistically significant, each accounts for only 1% of the variance on leadership. According to Tabachnick (1983) variances accounting for less than 10% of the variance are not considered meaningful.

Further analysis of the data, using stepwise multiple regression, examined relationship between the creativity and leadership. Stepwise multiple regression analysis is a method by which all potential predictors can be considered. Independent variables are stepped into the regression equation sequentially, in the order that produces the greatest increments to R^2 (Polit & Hungler, 1987).

Table 7

Correlations between Leadership Factors and Creativity

Transformational		Transactional		Non-Leadership
Intellectual Stimulation	.10 *	Management-by-Exception	-.12 *	---

Note. All correlations are based on $N = 417$.

* $p < .05$

Results of the regression analysis, summarized in Table 8, reveal that the combined effect of management-by-exception, individual consideration, and intellectual stimulation accounted for only 5.3% of the variance on creativity ($N = 417$, $R = .229$, F (3, 413) = 7.63, $p < .005$). Beyond this level, additional factors did not significantly add to the regression analysis. However, even though these results were statistically significant, because the combined effect explained only 5.3% of the variance, the results were not considered theoretically meaningful.

In answer to research question 1: it was concluded that creativity is not related to leadership style.

Table 8

Summary of Stepwise Regression of Creativity on Leadership Factors

Step	Predictor	R	R^2	F (R^2)	R^2 Change	F (R^2 Change)	β	r
1	Manage-by-Except	.123	.015	6.36 *	.0151	6.36 *	-.133	-.12
2	Indiv. Consider.	.170	.029	6.14 **	.0137	5.85 *	-.162	-.10
3	Intellect. Stim.	.229	.053	7.63 **	.0237	10.31 **	.218	.10

* $p < .05$. ** $p < .005$.

Research Question 2: What is the relationship between power as knowing and transactional/transformational leadership styles?

Pearson product moment coefficient correlations between the leadership and power as knowing subscales are summarized in Table 9. Except for contingent reward, all of the leadership subscales correlated with the power subscales at a significance level of $p < .0005$. Positive correlations, ranging from $r = .25$ between individualized consideration and involvement in creating change to $r = .46$ between inspiration and choice, were observed between all of the power subscales and all of the transformational leadershipsubscales. Negative correlations were observed across the transactional leadership subscales management-by-exception and with the laissez-faire score correlation with power subscales.

Because there were more than two (2) dependent and two (2) independent in this analysis, a canonical correlation was conducted in order to test the significance of the correlation between the leadership and power scores (see Table 10). The objective of canonical correlations is to find a linear compound of x-variables that has a maximum correlation with a linear compound of the y-variables and is most suitable for x and y variables that come from different domains (Van de Geer, 1971, pp. 156).

Table 9

Correlations between Leadership Factors and Power

	Power			
Leadership	Awareness	Choices	Freedom to Act	Involve. Change
Charisma	.40 *	.39 *	.38 *	.39 *
Inspiration	.41 *	.46 *	.45 *	.41 *
Intellectual Stimulation	.40 *	.39 *	.39 *	.41 *
Individualized Consideration	.33 *	.32 *	.33 *	.28 *
Management-by-Exception	-.35 *	-.33 *	-.32 *	-.28 *
Laissez-Faire	-.26 *	-.27 *	-.27 *	-.25 *

Note. Correlations are based on $N = 364$.

* $p < .0005$.

Table 10

Summary of Canonical Correlation Analysis: Leadership and Power

Squared Multiple Correlations of Each Variable with All Other Variables in the Same Set

Set 1: Leadership	R^2	Set 2: Power	R^2
Charisma	0.62142	Awareness	0.66550
Inspiration	0.67719	Choices	0.65258
Intellectual Stim.	0.52593	Freedom to Act	0.70156
Indiv. Consider.	0.52814	Involve. in Change	0.58155
Contingent Reward	0.33252		
Manage.-by-Except.	0.31699		
Laissez-Faire	0.23032		

Eigenvalues and Canonical Correlations

Eigenvalue	Canonical Correlation	Number of Eigenvalues	Bartlett's Test for Remaining Eigenvalues		
			χ^2	*df*	*p*
			181.16	28	0.0000
0.35735	0.59779	1	23.32	18	0.1787
0.02970	0.17234	2	12.55	10	0.2498
0.02077	0.14413	3	5.06	4	0.2814
0.01407	0.11861				

Table 10 continues

Squared Multiple Correlations of Each Variable with All Variables in the Other Set

Set/Variable	R^2	Adjusted R^2	F	df	p
Set 1					
Charisma	0.194492	0.185517	21.67	4,359	0.0000
Inspiration	0.239125	0.230647	28.21	4,359	0.0000
Intellect. Stim.	0.202358	0.193471	22.77	4,359	0.0000
Indiv. Consider.	0.127632	0.117913	13.13	4,359	0.0000
Cont. Reward	0.012842	0.001843	1.17	4,359	0.3248
Manage-by-Excp.	0.134172	0.124525	13.91	4,359	0.0000
Laissez-Faire	0.086954	0.076781	8.55	4,359	0.0000
Set 2					
Awareness	0.288440	0.274449	20.62	7,356	0.0000
Choices	0.311229	0.297685	22.98	7,356	0.0000
Freedom to Act	0.281313	0.267182	19.91	7,356	0.0000
Involve. Change	0.261944	0.247432	18.05	7,356	0.0000

Squared multiple correlations reflect the proportion of variance in the dependent variable accounted for by the combined simultaneous influence of the independent variables. The value represented varies from 0 - 1.0 showing the strength but not the direction of the relationship between the independent and dependent variables (Polit & Hungler, 1987). In this instance (see Table 10) the within set squared multiple correlations on the leadership variables ranged from a high of 0.67 on inspiration to a low of 0.23 on laissez-faire; within set squared multiple correlations on the awareness, choices, freedom to act intentionally and involvement in creating

change from a high of 0.70 on freedom to act intentionally to a low of 0.58 on involvement in creating change.

Canonical correlations, also presented in Table 10, were used to assess the relationship between leadership and power. The procedure uses Bartlett's χ^2 to assess the significance of the relationship between independent and dependent variables and lists eigenvalue for each correlation. Eigenvalues represent overlapping variance between pairs of canonical variates whose value can range from 0 - 1.0 (Tabachnich & Fidel, 1983, pp. 152). In canonical correlations, higher scores (closer to 1.0) indicate that a greater proportion of the variance is accounted for by the overlapping variance between the canonical variates.

In this instance, four canonical correlations were possible. The first canonical correlation = 0.59 was significant at the $p < .00005$ level ($\chi^2 = 181.16$, $df = 28$). In order to assess magnitude of this relationship, Thorndike (1978, pp. 179) suggests determining the variance which can be done by squaring the canonical correlation coefficient. In this instance, the eigenvalue was 0.357 indicating that 35.7% of leadership's variance can be accounted for by power.

With the exception of management-by-exception, squared multiple R correlations of each variable with all variables in the other set were significance at the $p < .00005$ level.

Between group R^2 scores for the leadership scales ranged from a low of 0.13 on contingent reward to a high of 0.24 on inspiration. Between group R^2 scores for the power ranged from a low of 0.26 on involvement in creating change to a high of 0.31 on choices. Therefore, power scores tended have a greater capacity to predict leadership scores than leadership did in predicting power scores.

Table 11 summarizes the stepwise multiple regression analysis with leadership style plotted against power. Except for the leadership subscale contingent reward where there were no statistically significant relationships, all of the power factors were significant at $p < .005$. Awareness and involvement in creating change accounted for 18.6% of the variance of charisma (15.9% of this accounted for by awareness alone) , choices and freedom to act intentionally accounted for 23.3% of the variance of inspiration (20.8% accounted for by choices), involvement in creating change and awareness accounted for 18.8% of the variance on intellectual stimulation (17.1% accounted for by involvement, freedom to act intentionally and awareness accounted for 12.3% of the variance on individualized consideration (11.1% accounted for by awareness), awareness and choices accounted for 13.2% of management-by- exception (12.0% of this explained by awareness) and choice and freedom to act intentionally accounted for 8.5% of the

Table 11

Summary of Stepwise Regression of Leadership Factors on Power

Step	Predictor	R	R^2	F (R^2)	R^2 Change	F (R^2 Change)	β	r
Dependent variable: Charisma								
1	Awareness	.399	.159	68.37 **	.1589	68.37 **	.159	.40
2	Involvement	.431	.186	41.12 **	.0267	11.82 **	.151	.39
Dependent variable: Inspiration								
1	Choices	.456	.208	94.97 **	.2078	94.97 **	.223	.46
2	Freedom to Act	.483	.233	54.82 **	.0251	11.83 **	.169	.45
Dependent variable: Intellectual Stimulation								
1	Involvement	.414	.171	74.91 **	.1714	74.91 **	.220	.41
2	Awareness	.445	.198	44.64 **	.0268	12.08 **	.154	.40
Dependent variable: Individualized Consideration								
1	Awareness	.333	.111	45.07 **	.1107	45.07 **	.150	.33
2	Freedom to Act	.351	.123	25.34 **	.0124	5.10 *	.124	.33
Dependent variable: Management-by-Exception								
1	Awareness	.347	.120	49.51 **	.1203	49.51 **	-.189	-.35
2	Choices	.364	.132	27.55 **	.0121	5.04 *	-.131	-.33
Dependent variable: Laissez-Faire								
1	Choices	.272	.074	28.97 **	.0741	28.97 **	-.119	-.27
2	Freedom to Act	.291	.085	16.67 **	.0105	4.12 *	-.104	-.27

* $p < .05$. ** $p < .005$.

variance on laissez-faire (7.4% of this variance accounted for by choices).

In answer to research question 2: power as knowing was moderately correlated with leadership style.

Research Question 3: What is the relationship between time experience and transactional/transformational leadership styles?

Pearson product moment coefficient correlations between the leadership and time experience subscales are summarized in Table 12. Individualized consideration was significantly but weakly correlated with the oceanic cluster (r = -.10, p < .05) and management-by-exception was also significantly but weakly correlated with the humanistic cluster (r = -.16, p < .001). While statistically significant, each these results accounts for less than 3% of the variance and are therefore not considered meaningful.

Because there were more than two (2) dependent and two (2) independent variables in this analysis, a canonical correlation was conducted in order to test the significance of the correlation between the leadership and time experience scores (see Table 13). While three canonical correlations were possible, results reveal that none of the canonical correlations reached statistical significance.

Table 14 summaries of the stepwise multiple regression analysis with leadership style plotted against time

Table 12

Correlations between Leadership Factors and Time Experience

Leadership	Time Experience		
	Vectorial	Oceanic	Humanistic
Intellectual Stimulation	-.06	-.10 *	.03
Management-by-Exception	-.06	-.03	-.16 **

Note. All correlations are based on $N = 414$.

* $p < .05$. ** $p < .001$.

Table 13

Summary of Canonical Correlation Analysis: Leadership and Time Experience

Eigenvalues and Canonical Correlations					
			Bartlett's Test for Remaining Eigenvalues		
Eigenvalue	Canonical Correlation	Number of Eigenvalues	χ^2	*df*	*p*
			29.69	21	0.0983
0.03460	0.18601	1	15.34	12	0.2232
0.03191	0.17863	2	2.13	5	0.8310
0.00521	0.07219				

Table 14

Summary of Stepwise Regression of Leadership Factors on Time Experience

Step	Predictor	R	R^2	F (R^2)	R^2 Change	F (R^2 Change)	β	r
Dependent variable: Intellectual Stimulation								
1	Oceanic Time	.097	.009	3.89 *	.0093	3.89 *	-.179	-.10
2	Humanistic Time	.175	.031	4.32 **	.0141	5.98 *	.140	.03
Dependent variable: Management-by-Exception								
1	Humanistic Time	.159	.025	10.69 **	.0253	10.69 **	-.177	-.16

* $p < .05$. ** $p < .005$.

experience subscores used in this study. Time experience accounted for a statistically significant proportion of the variance on intellectual stimulation and management-by-exception. The combined effect of the time experience subscores (oceanic and humanistic) accounted for 3.1% (R^2 = .031, $p < .005$) of the variance on intellectual stimulation and the combined effect of the humanistic subscore accounted for 2.7% (R^2 = .027, $p < .05$) of the of the variance on management-by-exception, with 2.5% (R^2 = .025, $p < .005$) of this variance explained by the humanistic cluster. Although statistically significant, the multiple regression results are not of sufficient magnitude to conclude that meaningful relationships exists.

In answer to research question 3: reported time experience was not correlated with leadership style.

Research Question 4: To what extent can preference for leadership style can be explained by the combination of creativity, power as knowing, and time experience?

Pearson product moment coefficient correlations between the leadership and the combination of creativity, power as knowing and time experience subscales are summarized in Table 15. As previously described, the highest correlations and only meaningful correlations were found between the leadership subscores and the power subscores.

Table 15

Correlations between Leadership Factors and Other Psychological Variables

	Charisma	Inspi-ration	Intel. Stim.	Indiv. Consid.	Cont. Reward	Manage. Except.	Laissez-Faire
Creativity	-05	-02	10 *	-10	-07	-12 *	02
Awareness	40 **	41 **	40 **	33 **	02	-35 **	-26 **
Choices	39 **	46 **	39 **	32 **	-01	-33 **	-27 **
Freedom to Act	38 **	45 **	39 **	33 **	06	-32 **	-27 **
Involve. in Change	39 **	41 **	41 **	28 **	05	-28 **	-25 **
Oceanic Time	-05	-03	-10 *	-05	-02	-02	-03
Human-istic Time	03	07	03	03	-05	-16 *	-06

Note. Decimal points omitted. Correlations are based on $N = 414$.

* $p < .05$ ** $p < .0005$.

The canonical correlation between leadership and creativity, power and time experience scores is summarized in Table 16. Within set squared multiple correlations on the leadership variables ranged from a high of 0.68 on inspiration to a low of 0.23 on laissez-faire; within set squared multiple correlations on the creativity, power, and time experience scales ranged from a high of 0.72 on freedom to act intentionally to a low of 0.01 on creativity. Overall, the power score had the highest within set squared multiple correlations in comparison to creativity and time experience.

Out of eight (8) possible correlations, the first two (2) canonical correlations reached significance beyond the .05 level. The first canonical correlation = 0.60 was significant at the $p < .00005$ level ($\chi^2 = 281.19$, $df = 56$) and accounted for 36.1% of the variance. The second canonical correlation also reached statistical significance at the $p < .05$ level ($\chi^2 = 60.74$, $df = 42$). However, the second canonical correlation accounted for only 7.4% of the variance and is therefore, is not considered meaningful.

With the exception of management-by-exception, squared multiple R correlations of the leadership variables with all variables in the other set were significance at the $p <$ .0001 or greater levels. R^2 scores for the leadership scales ranged from a low of 0.02 on contingent reward to a high of 0.24 on inspiration. The R^2 score on the creativity

Table 16

Summary of Canonical Correlation Analysis:
Leadership and Creativity, Power, and Time Experience

Squared Multiple Correlations of Each Variable with All Other Variables in the Same Set

Set 1: Leadership	R^2	Set 2: Other Vars.	R^2
Charisma	0.62283	Creativity	0.01621
Inspiration	0.67719	Awareness	0.67265
Intellectual Stim.	0.52598	Choices	0.65750
Indiv. Consider.	0.52612	Freedom to Act	0.72503
Contingent Reward	0.32947	Involve. in Change	0.59744
Manage.-by-Except.	0.31621	Vectorial Time	0.18993
Laissez-Faire	0.22806	Oceanic Time	0.26705
		Humanistic Time	0.31863

Eigenvalues and Canonical Correlations

Eigenvalue	Canonical Correlation	Number of Eigenvalues	Bartlett's Test for Remaining Eigenvalues		
			χ^2	df	p
			218.19	56	0.0000
0.36146	0.60122	1	60.74	42	0.0306
0.07411	0.27222	2	33.71	30	0.2925
0.04940	0.22226	3	15.93	20	0.7210
0.02714	0.16475	4	6.27	12	0.9019
0.01205	0.10976	5	2.02	6	0.9182
0.00334	0.05775	6	0.84	2	0.6560
0.00240	0.04898				

Table 16 continues

Squared Multiple Correlations of Each Variable with All Variables in the Other Set

Set/Variable	R^2	Adjusted R^2	F	df	p
Set 1					
Charisma	0.209314	0.191292	11.61	8,351	0.0000
Inspiration	0.244298	0.227074	14.18	8,351	0.0000
Intellect. Stim.	0.221494	0.203751	12.48	8,351	0.0000
Indiv. Consider.	0.148342	0.128931	7.64	8,351	0.0000
Cont. Reward	0.020433	-0.001894	0.92	8,351	0.4946
Manage-by-Excp.	0.163964	0.144909	8.60	8,351	0.0000
Laissez-Faire	0.091650	0.070947	4.43	8,351	0.0001
Set 2					
Creativity	0.063394	0.044769	3.40	7,352	0.0016
Awareness	0.288310	0.274157	20.37	7,352	0.0000
Choices	0.312100	0.298420	22.81	7,352	0.0000
Freedom to Act	0.291683	0.277597	20.71	7,352	0.0000
Involve. Change	0.263031	0.248376	17.95	7,352	0.0000
Vectorial Time	0.028422	0.009101	1.47	7,352	0.1764
Oceanic Time	0.011655	-0.007999	0.59	7,352	0.7616
Humanistic Time	0.026672	0.007316	1.38	7,352	0.2135

variable (0.06) with all variables in the leadership set was significant at the $p < .0016$. The R^2 scores on the power variables with all variables in the leadership set were significant at the $p < .00001$ or greater levels. The R^2 scores for the power ranged from a low of .26 on involvement in creating change to a high of .31 on choices. As described previously, the power scores tended to have the greatest capacity for predicting leadership in comparison to the other scores. In addition, power had slightly stronger capacity to predict leadership scores than leadership had in predicting creativity, power, or time experience scores.

A stepwise multiple regression was performed to examine how much of the variance on leadership can be

accounted for by the subscores on creativity, power and time experience. The results, shown in Table 17, indicate that for all leadership subscales, except contingent reward which had no statistically significant relationships, power accounted for most of the variance on leadership factors ($p < .005$). However, for those items that reached statistical significance, power subscores accounted for the largest percentage of the variance in the leadership subscales. For example, creativity was the only other score to demonstrate a significant increases in the variance with leadership score. This occurred on two scales: individualized consideration were creativity R^2 Change = 0.0127, $p < .05$ and management-by-exception R^2 Change = 0.0208, $p < .005$. This can be interpreted to mean that creativity accounted for 1.2% of the variance in the first instance and only 2.0% of the variance in the second. Conversely, power subscores accounted for 19.9% of the variance intellectual stimulation, 11.3% on individualized consideration, 12.2% on management-by-exception 7.6% of the variance on laissez-faire. Therefore, power scales accounted for the largest proportion of the variance in the leadership and creativity or time experience did not add substantively to the regression analysis.

Table 17

Summary of Stepwise Regression of Leadership Factors on Creativity, Power, and Time Experience

Step	Predictor	R	R^2	F (R^2)	R^2 Change	F (R^2 Change)	β	r
Dependent variable: Charisma								
1	Choices	.400	.160	68.19 **	.1600	68.19 **	.132	.40
2	Awareness	.429	.184	40.22 **	.0239	10.45 **	.139	.40
3	Involvement	.442	.196	28.83 **	.0116	5.13 *	.123	.39
Dependent variable: Inspiration								
1	Choices	.461	.212	96.42 **	.2122	96.42 **	.236	.46
2	Freedom to Act	.487	.237	55.43 **	.0248	11.59 **	.194	.45
Dependent variable: Intellectual Stimulation								
1	Involvement	.416	.173	74.83 **	.1729	74.83 **	.196	.42
2	Awareness	.446	.199	44.31 **	.0260	11.58 **	.142	.40
Dependent variable: Individualized Consideration								
1	Freedom to Act	.336	.113	45.43 **	.1126	45.43 **	.159	.34
2	Creativity	.354	.125	25.58 **	.0127	5.20 *	-.112	-.11
3	Awareness	.372	.138	19.00 **	.0126	5.22 *	.137	.33
Dependent variable: Management-by-Exception								
1	Awareness	.349	.122	49.59 **	.1217	49.59 **	-.194	-.35
2	Creativity	.378	.143	29.66 **	.0208	8.66 **	-.132	-.15
Dependent variable: Laissez-Faire								
1	Freedom to Act	.276	.076	29.51 **	.0762	29.51 **	-.131	-.28

* $p < .05$. ** $p < .005$.

In answer to research question 4, the largest proportion of preference for leadership style is explained by power as knowing. Combining creativity and time experience with power as knowing does not substantively help to explain preference for leadership style.

Research Question 5: Are there significant relationships among selected demographic variables of educational preparation, length of work experience, type of school, and scores on leadership style, creativity, power as knowing, and time experience?

Pearson product moment coefficient correlations between leadership, creativity, power as knowing, and time experience (the psychological variables) and the demographic variables are summarized in Table 18. Several weak but statistically significant correlations were found between school type and between highest degree and the variables. The strongest correlation found was between intellectual stimulation and highest degree (r = .16, $p < .005$). A second statistically significant correlation was found between highest degree and laissez-faire (r = -.11, $p <$ .05). School type was negatively correlated with Charisma (r = .-14, $p < .005$), suggesting that faculty members from private schools tended to score higher on charisma; school type was negatively correlated with individualized consideration (r = -.13, $p < .05$), suggesting that faculty in private schools tended to score higher on individualized

Table 18

Correlations between Demographic Variables and Psychological Variables

Psychological Variables	School Type	Highest Degree	Years as Educator
Charisma	-.14 **	.06	.04
Intellectual Stimulation	-.06	.16 **	-.02
Individualized Consideration	-.13 *	.01	-.07
Management-by-Exception	.04	-.11 *	-.01
Laissez-Faire	.13 *	.00	.07

Note. Correlations are based on *N* from 379 to 438.

* $p < .05$. ** $p < .005$.

consideration. School type was positively correlated with laissez-faire leadership style ($r = .13$, $p < .05$), indicating that faculty in public schools tended to score higher on laissez-faire.

The canonical correlations between the demographic variables and leadership, creativity, power and time experience scores are summarized in Table 19. The first canonical correlation was statistically significant ($p < .005$, $\chi^2 = 74.12$, $df = 45$). However, this canonical correlation accounted for only 9.9% of the variance therefore, is not considered meaningful.

Table 19

Summary of Canonical Correlation Analysis: Demographic Variables and Leadership, Creativity, Power, and Time Experience

Eigenvalues and Canonical Correlations					
			Bartlett's Test for Remaining Eigenvalues		
Eigenvalue	Canonical Correlation	Number of Eigenvalues	χ^2	*df*	*p*
			74.12	45	0.0040
0.09952	0.31546	1	37.79	28	0.1023
0.05976	0.24445	2	16.44	13	0.2260
0.04635	0.21529				

A stepwise multiple regression was performed to examine how much of the variance on leadership can be accounted for by the demographic variables. The results, shown in Table 20, demonstrate several statistically relationships. However, none of these results accounted for more than 3% of the variance. Therefore, it is concluded that a substantial proportion of the leadership variance cannot be accounted for by the demographic variables.

A stepwise multiple regression was also performed to examine how much of the variance on creativity, power, and time experience can be accounted for by the demographic variables. The results, shown in Table 21, demonstrate one statistically significant relationship existed between school type and involvement in creating change ($p < .05$),

Table 20

Summary of Stepwise Regression of Leadership Factors on Selected Demographic Variables

Step	Predictor	R	R^2	F (R^2)	R^2 Change	F (R^2 Change)	β	r
Dependent variable: Charisma								
	School type	.132	.017	6.27 *	.0173	6.27 *	-.134	-.13
Dependent variable: Intellectual Stimulation								
	Highest degree	.158	.025	9.02 **	.0248	9.02 **	.181	.16
Dependent variable: Individualized Consideration								
	School type	.123	.015	5.43 *	.0151	5.43 *	-.119	-.12
Dependent variable: Management-by-Exception								
	Highest degree	.126	.016	5.73 *	.0159	5.73 *	-.150	-.13
Dependent variable: Laissez-Faire								
	School type	.115	.013	4.75 *	.0132	4.75 *	.108	.11

* $p < .05$. ** $p < .005$.

Table 21

Summary of Stepwise Regression of Creativity, Power, and Time Experience on Selected Demographic Variables

Step	Predictor	R	R^2	F (R^2)	R^2 Change	F (R^2 Change)	β	r
Dependent variable: Involvement								
	School type	.116	.014	4.86 *	.0135	4.86 *	-.118	-.12

* $p < .05$.

where school type accounted for only 1.4% of the leadership variance. Therefore, it is concluded that a substantial proportion of the creativity, power, and time experience variance cannot be accounted for by the demographic variables.

In answer to research question 5, preference for leadership style is not correlated with the demographic variables.

Summary

In summary, statistical procedures used to examine the research questions were selected for their ability to analyzed the relationship between the variables. These procedures included calculation of simple statistics (means, *SD* and ranges of scores), Pearson's product moment correlations, canonical correlations and stepwise multiple regression.

Mean scores on the MLQ--5X were significantly above norms on the transformational leadership subscores. They were average for contingent reward and below average on management-by-exception and laissez-faire. Four hundred and seventeen (417) faculty members out of 418 highest aggregate mean score was on transformational leadership.

Mean scores for RAS and PKPCT were consistent with findings of other researchers and results on the TMT were clustered near the mid-point on all of the subscales.

Cronbach's α on all of the instruments were also consistent with results obtained by other researchers.

The PKPCT was the only Rogerian variable to demonstrate statistically significant and theoretically meaningful relationships with results on the MLQ--5X. Power as knowing also accounted for the largest proportion of the variance on leadership when combined with creativity and time experience. The demographic variables of school type, highest degree, and years as an educator were not found to be substantively correlated with preference for leadership style. Discussion of these findings, focusing on a Rogerian perspective, are presented in Chapter V.

Chapter V

DISCUSSION AND CONCLUSIONS

Introduction

The purpose of this study was to begin to frame transactional and transactional leadership theory (Bass, 1985, Burns, 1978) within the context of Martha Rogers' Science of Unitary Human Beings (Rogers, 1970, 1986, 1989, 1990, 1992). Using a Rogerian perspective, creativity, power as knowing, and time experience were postulated to be correlates of human field patterning. Leadership styles and the Rogerian variables are explained using Rogers' principle of integrality, which focuses on the person-environmental interaction. This chapter presents a summary and interpretation of these findings.

Discussion of the Findings

Leadership Style

The sample consisted of 439 faculty members from 59 baccalaureate and higher degree programs located throughout the United States, including one U.S. territory. On average, faculty were well established as nurse educators. The typical faculty member had approximately 15 years of experience as a nurse educator, with 9 of those years in their current position. Faculty characteristics and

institutional profiles obtained in this study were similar to those obtained by the American Association of College of Nursing (1993), suggesting that this was a representative sample of nursing faculty in baccalaureate and higher degree programs.

Self reported faculty member scores on leadership style were skewed heavily towards transformational leadership, with 417 out of 418 faculty members having their highest mean score in this area. In addition, aggregate mean scores for transformational subscales were higher than norms; transactional subscale norms were similar to the norms; and laissez-faire was below norms provided by Bass and Avolio (1990).

While the observed number of faculty whose highest mean score was transformational (417 out of 418) appears impressive, this finding needs to be interpreted in light of normative data. For example, while scores for transactional, transformational, and laissez-faire leadership styles all have a theoretical range of 0 - 4, normative data suggest that subjects tend to score highest on transformational leadership, then transactional leadership and lowest on laissez-faire. In a study of 251 business and industrial leaders, Bass and Avolio (1990) found that aggregate transformational scores equaled 2.82, transactional aggregate scores equaled 2.035 and laissez-faire equaled 0.90. Similar results were obtained in a

study of 135 head nurses by Evans (1992). Since the scales are unbalanced, comparisons using percentiles are more meaningful.

In this study, scores on the transformational scales ranged from the 60th to 70th percentile on charisma to 90th to 99th percentile on inspiration in comparison to norms provided by Bass and Avolio (1990). These results reflect above average faculty scores on transformational leadership. Why faculty scored above average on the transformational scale is not clear from the data. While research on the MLQ has focused comparing leadership style to institutional outcome measures (Bass & Avolio, 1990) several studies have examined individual traits as indicators of leadership style.

For example, although results are mixed, several researchers have examined the relationship between leadership style and gender. Bass and Avolio (1990) found that female leaders tend to score higher in transformational and lower in transactional than male leaders. In contrast, Young (1990), who studied academic deans from a variety of disciplines, found no significant differences between the 196 female and 179 males and scores on the MLQ.

Interestingly, Dunham and Klafehn (1990) studied 80 nursing hospital executives (74 females and 6 males) and found that persons with a master's in nursing were more transformational than persons with a master's degree in

other areas. This evidence suggests that role modeling plays a role in the development of leadership style preference and that clustered life experiences in either predominately male or predominately female groups are reflected in leadership human field patterns.

On the transactional scale, the contingent reward average was equal to the 50th percentile, while management-by-exception score (1.07) was below the 10th percentile. Bass and Avolio (1990) suggest that in most organizations it is unlikely that management-by-exception scores will fall below 1.5, because of the necessity of taking corrective action periodically (p. 35). Why then did nursing faculty score so low on management-by-exception? Bass and Avolio (1992) suggest that management-by exception is most effective when not balanced with other more effective types of leaders. Low scores on management-by-exception may reflect faculty's clear preference for transformational leadership style, considered to be a more effective leadership style.

The mean laissez-faire score was between the 10th and 20th percentile in comparison to the norm group (Bass & Avolio, 1992). From a leadership perspective, this a "good" finding in light of the inactive, nonleader qualities associated with a laissez-faire leadership style.

Within a Rogerian conceptual model, human and environmental fields are postulated to be engaged in

constant and reciprocal interactions. Manifestations of the human field pattern emerge out of the human-environmental field mutual process and are unpredictable, continuous, relative, and innovative (Rogers, 1992). In this instance, faculty scores on leadership are assumed to reflect a direct measure of human field patterning called leadership.

The concept that the human-environmental field pattern manifestations are integral is consistent with the leadership model proposed by Bass (1985). According to Bass (1990), depending on the situation, some organizational environments work better with different kinds of leaders. For example, transformational leaders are more likely to emerge in times of growth, change or crisis. Conversely, transactional leaders might be expected to emerge in "steady state" bureaucracies and tend to work within the existing organization climate (p. 17).

According to Bass (1985) the most effective leaders are those that possess both transactional and transformational leadership characteristics. These are leaders that possess the skills needed to motivate/inspire others to reorder their thinking (transformational) and the interpersonal skills needed to implement a shared vision (transactional). In this study, faculty scored above norms on all of the transformational scales, were in the 50th percentile for scores on the transactional scale contingent reward and had an aggregate laissez-faire score well below norms

established by Bass and Avolio (1990), suggesting that faculty had diverse, innovative human field pattern manifestations in the area of leadership.

Above average transformational scores found in this study are consistent with the roles typically assumed by faculty. Although faculty do not hold titled leadership positions, such as dean or director, because of their faculty role they are de facto leaders. In addition to being highly educated, faculty assume responsibility for both leading students and helping students to become leaders.

Rogerian Correlates

In a Rogerian model, the number of possible correlates to leadership style are theoretically infinite. However, after reviewing Rogerian and leadership literature three correlates were identified as being conceptually consistent with both models. These correlates included creativity, power as knowing, and time experience. Simple statistics, including mean, standard deviation, and range of scores were determined for the Rogerian correlates and are reported here.

Means, standard deviations and ranges of scores were calculated for the creativity, power as knowing, and time experience tests. Means, standard deviations, and range of scores on the Revised Art Scale (Welsh, 1980) and the Power as Knowing Participation in Change Test (Barrett, 1983) were

comparable to the findings of other researchers as reported in Chapter III. Mean scores on the Time Metaphor Test were clustered near the mid-points on all three subscales, indicating that faculty had diverse perspectives of time experience rather than preference for a single pattern.

While it is appreciated that means, standard deviations and ranges of scores provide a rather limited view of the data, it is rather surprising that none of the scores matched or even approached the results found on preference for leadership style. Conceptually, each of the instruments measures human attributes; the instruments were completed in a relatively compressed time frame; and each participant completed their instruments within the same environmental field. How is it that faculty members showed such a clear preference for diverse and innovative leadership style but did not score similarly on the Rogerian variables?

In Rogerian terms, the human **and** environmental field process is manifested by change that is unpredictable, continuous, relative, and innovative (Rogers, 1992). Perhaps the discrepancy between the degree to which faculty scored on perceived leadership style and the Rogerian variables reflects the unpredictable, continuous, relative, and innovate nature of phenomena **within** the human field pattern, even when time and environmental context are constant. In addition, perhaps some of the discrepancy between the degree to which faculty scored on perceived

leadership style and the Rogerian variables may be related to the degree to which instruments take into account the integral nature of human-environmental field patterns.

Research Questions

The first research question examined the relationship between creativity and TA/TF leadership styles. Pearson *r* correlations between scores on The Revised Art Scale (Welsh, 1980) and the Multifactor Leadership Questionnaire 5X Self Rate form showed weak but statistically significant relationships between creativity and intellectual stimulation ($r = .10$, $p < .05$) and between creativity and management-by-exception ($r = -.12$, $p < .05$). Stepwise multiple regression analysis revealed that the combined effect of management-by-exception, individual consideration and intellectual stimulation accounted for a statistically significant proportion of the variance between creativity and leadership.

While these findings reached statistical significance, they accounted for approximately 5% of the variance and were not considered to be theoretically meaningful. Therefore, it was concluded that creativity was not related to leadership style.

Reflecting on these findings, it may be helpful to return to the theoretical underpinnings of the creativity measure. The Revised Art Scale (Welsh, 1980) was originally developed using artist matched against nonartist as the

control group. As Crosson and Robertson-Tchabo (1983) concluded, preference for perceptual complexity may be connected to artistic creativity and may be of less value in determining creativity in other individuals. As faculty in this study manifested diverse leadership style human field patterns, perhaps a different measure of creativity, conceptually closer to leadership human-environmental field pattern manifestations, would have served as a more useful measure of creativity. However, such a tool does not presently exist.

The second research question examined the relationship between power as knowing and transactional and transformational leadership styles. While mean scores on the PKPCT were not as heavily skewed as the leadership scores, subsequent analysis revealed that power as knowing was the only Rogerian variable to show significant and meaningful correlations with leadership style.

Except for contingent reward, all of the leadership subscales correlated with power subscales ($p < .0005$). Positive correlations (ranging from $r = .25$ to $r = .46$) were found between all of the transformational and powers subscales scales. Significant negative correlations ($p < .0005$) were observed between all of the power scores and management-by-exception, (one of two transactional subscores) range $r = -.28$ to $r = -.35$ and on the single laissez-faire score, with a range from $r = -.25$ to $r = -.27$.

These patterns can be interpreted to mean that as faculty scores on the power as knowing measure increased scores on transformational leadership tended to increase. Similarly, as scores on the power as knowing measure increased, scores on and the laissez-faire measure tended to decrease. These findings make sense in light of the concepts being measured by each of the instruments. Less clear are the results on the transactional subscales where no correlations were found between contingent reward and power and negative correlations were observed between management-by-exception and power.

Canonical correlations were used to assess the relationship between leadership style and power as knowing. Results of this test demonstrated that a highly significant relationship exists between leadership style and power as knowing (χ^2 =181.16, *df* =28, $p < .00005$) accounting for 35.7% of the variance between leadership and power.

Significant relationships between leadership and power as knowing were also demonstrated using stepwise multiple regression. With the exception of contingent reward, where none of the power subscores were significant, all of the power subscales accounted for significant proportions of the variance on all of the remaining leadership style subscales ($p < .005$). Most of the variance on leadership was accounted for as follows: 15.9% - charisma by awareness; 20.8% - inspiration by choices; 17.8% - intellectual

stimulation by involvement in creating change; 11.1% - individualized consideration by awareness; 10.0% - management-by-exception by awareness, and 7.4% of the variance on laissez-faire was accounted for by choices. Based on these findings, it was concluded that leadership style was moderately correlated with power as knowing.

Since no other studies were located which examined the relationship between leadership style and power as knowing, it is not possible to compare these results with other conceptually similar research findings. However, moderately strong relationships between leadership style and power as knowing is not surprising.

Both leadership and power instruments were developed within a human-environmental context and both were derived from theoretical models measuring overlapping constructs. For example, individuals who knowingly participate in change are conceptually similar to individuals who "provide symbols and simplified emotional appeals to increase awareness and understanding of mutually desired goals" (Bass & Avolio, 1990, p. 19). Depending on how humans knowingly participate, they actualize some leadership potentials rather than others and, thereby, share in the creation of their human and environmental reality.

The third research question examined the relationship between time experience and TA/TF leadership styles. Pearson product moment coefficient correlations between

leadership and time experience revealed that individualized consideration was significantly but weakly correlated with the oceanic cluster ($r = -.10$, $p < .05$) and that management-by-exception was also significantly but weakly correlated with the humanistic cluster ($r = -.16$, $p < .001$). While statistically significant, each these results accounted for less than 3% of the variance and therefore are not considered meaningful.

Canonical correlations between leadership style and time experience did not reach statistical significance. Although stepwise multiple regression yielded several statistically significant relationships, none were of sufficient magnitude to conclude that meaningful relationships exist between time experience and leadership. Therefore, it was concluded that in this sample, time experience was not correlated with leadership style.

The lack of correlation between time experience and leadership was not expected, given the many references to time in both leadership and Rogerian literature. While a null hypothesis may accurately reflect the human-environmental field patterns between time experience and leadership style, the absence of significant, meaningful correlations might also be explained by inconsistencies between the human-environmental field patterns being measured.

From a leadership perspective, it is frequently postulated that transformational leaders are future oriented. Although leadership literature places a good deal of emphasis on future orientation to time, the importance of past and present time experience is not ignored. For example, understanding institutional history and the cultural context are important ingredients of successful leaders. In this study, one (1) question on the demographic form asked faculty to indicate their primary reference to time experience as being either past, present or future oriented. Based on a 6 point rating scale, 43.7% indicated that they were much more future oriented; 22.7% somewhat more future oriented; 14.2% equal past, present and future; 18.5% present; 0.7% somewhat more past; and only 0.2% considered their time orientation to be much more past. While these findings are preliminary and should be investigated more thoroughly, it does suggest that a pattern of future orientation to time experience in individuals who are transformational leaders.

Theoretically, perhaps the lack of correlation between leadership style and time experience might be explained by a discrepancy between the basic qualities of time experience presumed under a leadership model versus those assumed in the Rogerian model. The leadership model presumes a linear, past to future orientation, which is fundamentally different

than a Rogerian model, in which time experience is assumed to be nonlinear.

The Time Metaphor Test, with its vectorial, oceanic, and humanistic clusters, presumes to measure qualitative aspects of time experience. The vectorial cluster comes closest conceptually to the leadership model and represents a "Newtonian sense of time, one defined in terms of an absolute, impersonal, constant, and directional rate of change in the universe" (Knapp & Garbutt, 1958). While this cluster is conceptually similar to a model which emphasizes past, present and future time experience, perhaps the distinctions between a "directional rate of change" and past, present and future time experience are of sufficient magnitude to conclude that they are measuring distinctly different constructs.

The oceanic cluster, which is conceptually similar to a nonlinear model of time proposed by Rogers, can be described as being conspicuous for its "lack of any suggestion of directionality and the prevailing sense of time as surrounding and encompassing in a passive sense, almost as though time were an oceanic medium" (Knapp & Garbutt, 1958). However, this cluster also failed to demonstrate any statistically meaningful relationships with leadership style. In a world where human and environmental field patterns are postulated to be integral, perhaps the absence of significant, meaningful relationships between leadership

style and the oceanic cluster may reflect the relative absence of the environmental context in the instrument.

While the precise meaning of humanistic cluster was not determined by Knapp and Garbutt, it is presumed to imply that "man is the measure of all things" (1958, p. 434). In a Rogerian sense, the humanistic cluster might then be considered to reflect a sense of time experience that an individual relates to on a personal level; that is, an individual's sense of time reflects their sense of change in human-environmental field patterns at the point in space-time that the measure was taken (Rawnsley, 1977, 1990b).

Alternatively, from a Rogerian perspective a lack of correlation between leadership style and time experience might be interpreted to mean that individuals in diverse and innovative environments might be expected to have diverse and innovative types of time experiences. In other words, time experience is relative for a given individual and varies within a given human-environmental field pattern. Therefore, results on the Time Metaphor Test may be interpreted to mean a more diverse and innovative human being perceives time in many different ways, rather than as "vectorial", "humanistic" or "oceanic" and may be reflective of faculty who demonstated a simultaneous preference for transformational (visionary) and transactional (pragmatic) leadership styles.

Within the leadership domain, there is an interest in examining the concept of future time experience. For example, one corollary of a "visionary" leader might be related to their preference for future time experience. In this study, one question posed on the demographic form demonstrated that 66.4 % faculty had a preference for future time experience and only 0.9% showed preference for past time experience. However, detailed assessment of past to future time experience was purposely excluded from the design of this study because the linear connotations associated with this conceptual approach are contrary to Rogerian notions of time experience (Rogers, 1992).

Implicit in Rogers description of a pandimensional reality is the concept of non-linearity. Pandimensionality, defined as a "non-linear domain without spatial or temporal attributes" (Rogers, 1992, p. 29) assumes that events do not occur in a linear fashion. This raises the question: in a pandimensional universe, are there any events that occur in a linear direction? Rogers (1992) suggests that some events are linear. For example, the principle of resonancy, defined as "continuous change from lower to higher frequency wave patterns in human and environmental fields" (Rogers, 1992, p. 31) implies that wave patterns occur in a lower to higher linear direction. Therefore, in a pandimensional universe it appears inconsistent to allow some concepts to be described in linear terms and to specifically limit

investigation of other phenomena that have linear qualities. Rogerian scholars need to consider this inconsistency and refine the conceptual model or choose to ignore linear qualities that may be of significance to the understanding of human-environmental field pattern manifestations.

The fourth research question examined the extent to which preference for TA/TF leadership style can be explained by the combination of creativity, power as knowing, and time experience.

The first two (2) canonical correlations reached significance beyond the .05 level. The first canonical correlation, which examined the composite set of the leadership variables maximally correlated with creativity, power as knowing and time experience variables, equalled 0.60 and was significant at the $p < .00005$ level ($\chi^2 = 281.19$, $df = 56$) and accounted for 36.1% of the variance. The second canonical correlation also reached statistical significance at the $p < .05$ level ($\chi^2 = 60.74$, $df = 42$). However, the second canonical correlation accounted for only 7.4% of the variance and is therefore, is not considered meaningful. Interestingly, while the combined effect of the Rogarian variables accounted for 36.1% of leadership variance, as noted in previous data analysis, power alone accounted for 35.7% of the variance on leadership. Therefore, while there were significant canonical correlations between leadership style and creativity, power

as knowing and time experience; most of the correlation can be attributed to the influence of power as knowing alone.

Findings of a stepwise multiple regression revealed that for all leadership subscales, except contingent reward which showed no statistically significant relationships, power accounted for most of the variance on leadership factors ($p < .005$). Creativity was the only other Rogerian variable to reached statistical significance. In those instances where creativity did account for a statistically significant proportion of the variance (individualized consideration and management-by-exception), power subscores accounted for the most of the variance on those leadership subscales. Therefore, power scales accounted for the largest proportion of the leadership variance and neither creativity nor time experience added substantively to the regression analysis.

In light of the results obtained on the first three research questions, these results were not surprising. However, these findings raise the question: if power as knowing accounts for 35.7% of the variance on leadership style and creativity and time experience to not add substantively to the analysis, what other factor(s) account for the remaining 64% of the variance?

The fifth research question examined the relationships among selected demographic variables of educational preparation, length of work experience, type of school and

scores on leadership style, creativity, power as knowing, and time experience. Pearson product moment correlations reveal several statistically significant but weakly correlated relationships between school type and between highest degree and the variables. However, these correlations were not strong enough to be considered theoretically meaningful. Having said this, taken together, a pattern did emerge on those items that reach statistical significance.

The significant but weak correlations can be interpreted to mean that faculty from private schools tended to score higher on transformational variables of charisma and individualized consideration. Conversely, faculty from public schools tended to score lower on those transformational variables. In addition, faculty from private schools tended to score lower on laissez-faire and faculty from public schools tended to score higher on the laissez-faire scale. While the data is inconclusive, it does suggest that there is a relationship between type of school and leadership style.

Highest degree was positively, but weakly correlated with one transformational variable, individualized consideration ($r = .16$, $p < .005$) and negatively correlated with the laissez-faire scale ($r = -.11$, $p < .05$). Contrary to results obtained by Dunham and Klafehn (1990), who found a correlation between educational preparation and

transformational leadership scores in 80 nursing service executives ($\chi^2 = 4.61$, $p < .05$ for persons with doctoral degrees and $\chi^2 = 3.40$, $p < .05$ for persons with masters degree in nursing). The findings of this study are not of sufficient magnitude to conclude that a meaningful relationship exists between educational preparation and preference for leadership style.

Interestingly, years of experience was not correlated with leadership style, creativity, power as knowing, or time experience. Since the typical faculty member had 15 years experience as an nurse educator (range = 1 to 36 years, *SD* = 7.94 years) it might have been expected that experience would play some role in distinguishing more experienced from less experienced faculty. Apparently, faculty members either came to the college/university setting with these leadership skills or learned these skills quickly once they arrived and then retained these skills throughout their careers.

Alternatively, perhaps there is something about the current college/university environment that impact virtually all faculty in similar ways. Assuming that more experienced faculty are chronologically older than less experienced faculty, these results are consistent with the Rogerian postulate that chronological age is not a basis of differentiating human change (Rogers, 1992). Instead, these

results may reflect an undetermined characteristic of the human-environmental mutual process.

The first canonical correlation between the demographic and psychological variables was statistically significant ($p < .005$, $\chi^2 = 74.12$, $df = 45$). However, this accounted for only 9.9% of the variance and was not considered to be theoretically meaningful.

A stepwise multiple regression was performed to examine how much of the variance on leadership can be accounted for by the demographic variables. School type accounted for 1.7% of the variance on charisma ($p < .05$); highest degree accounted for 2.5% of the variance on intellectual stimulation ($p < .005$); school type accounted for 2.5% of the variance on individual consideration ($p < .05$); highest degree accounted for 1.6% of the variance on management-by-exception ($p < .05$); and school type accounted for 1.3% of the variance on laissez-faire ($p < .05$).

Several demographic variables also reached statistical significance on the multiple regression with the leadership subscores. However, the F (R^2 Change) was not statistically significant and therefore, they did not add significantly to the regression analysis. Since none of these results accounted for more than 3% of the variance, it is concluded that a substantial proportion of the leadership variance cannot be accounted for by the demographic variables.

A stepwise multiple regression was also performed to examine how much of the variance on creativity, power, and time experience can be accounted for by the demographic variables. One statistically significant relationship existed between school type and involvement in creating change ($p < .05$). However, school type accounted for only 1.4% of the leadership variance. Therefore, it was concluded that a substantial proportion of the creativity, power, and time experience variance cannot be accounted for by the demographic variables.

Because the human and environmental fields are integral, results might also be expected to indirectly reflect faculty's environmental field. For example, in this instance it might be assumed that since manifestations of human field pattern are diverse and innovative, manifestations of the environmental field pattern must also be diverse and innovative as well. However, it appears that something other than demographic variables is contributing to leadership human field pattern manifestations.

For example, similar to the results found in this study, Dunham and Klafehn (1990) obtained a composite transformational score of 3.19 ($SD = .30$) and transactional composite score of 2.09 ($SD = .44$) in 80 nurse executives of hospitals ranging from 96 to 1,100 beds. Except for level of education, demographic variables including: age, size institution, type of institution (nonprofit, private profit,

and for-profit facilities), marital status, responsibility for nursing/non-nursing departments were not correlated with leadership style scores.

The human field patterns examined in this study are primarily integral with the University environmental field pattern, although in a universe of open systems other contributors need to be considered as well. For example, cultural influences and/or regional, national, or global issues may be reflected in the human-environmental field pattern manifestations within the University setting. In addition, in a University setting the environment might also be conceptualized as human field relationships, rather than the institutional environment per se.

The findings of this study raise questions about the nature of the integral relationship between outcomes on the leadership test (as manifested by above average transformational, average transactional and below average scores) and the University environmental field patterns, which appear to have a heavy focus on diverse interpersonal relationships. What are the relationships between the University environment and diverse, innovative leadership human field pattern manifestations of nursing faculty?

Could it be that the human field pattern manifestations reflect a leadership style consistent with a University environmental field emphasizing collegiality and rich in experiences and opportunities? Or is it something else? As

suggested by Coop (1994), understanding the context (environment) adds to our understanding of phenomena of interest to nursing. In this study, absence of a more direct measure of environmental field illustrates the limitations of examining one component of the human-environmental mutual process.

Implications of the Findings

The purpose of this study was to begin to frame transactional and transformational leadership theory within the context of Martha Rogers' Science of Unitary Beings. Underlying this purpose was a desire to identify meaningful theoretical linkages by combining models from different disciplines.

Nursing has long considered leadership to be within its domain, yet all of the leadership models used by nursing have been developed outside of nursing. Blalock (1984) suggests that by linking two or more bodies of literature, new insights are likely to emerge. While there is a considerable amount of emphasis currently being placed by nursing scholars on the development of nursing theories (Falco, 1989; Kim, 1989;), there appears to be consensus among nursing administrators that administration represents "a broad body of information that is claimed and used by several disciplines" (Blair, 1989, p. 8). "To effectively manage the complex problems inherent in nursing...

management views must be blended and balanced with a nursing perspective" (Jennins & Meleis, 1988, p. 59). Therefore, it was hoped that by blending theoretical models from different domains (nursing and management) new constructs would become apparent and yield a greater range of variables of interest to nursing.

Comparison of Bass's leadership and Rogerian models revealed many similarities. For example, to varying degrees both models assume a universe of open systems and focus on the examination of patterns inherent in the mutual human-environmental process. In Bass's model, the environmental context is acknowledged to contribute to leadership style. In contrast, the Rogerian model assumes that human-environmental field patterns are integral with one another.

It may be assumed that knowledge of human field pattern manifestations reveals something about the environmental field pattern. However, without direct measurement of environmental field pattern manifestations it is difficult to say with any degree of certainty what patterns exist between the human-environmental fields. Given the emphasis that Rogers places on the integrality of human-environmental field patterns, future researcher should give careful consideration to incorporating measures for both human and environmental field pattern manifestations in the design of the study.

In this study faculty scored above average on the transformational scale, average aggregate score for transactional leadership and below average on the laissez-faire score. In light of significant changes and proposed changes in the U.S. health care system, these finding suggests that faculty are well suited to serve as leaders in this effort. The data suggests that faculty are capable of developing an organizational vision and of inspiring others to work towards mutually accepted goals.

In addition, the results demonstrated that power as knowing was moderately correlated with leadership style. Given nursing faculty's basic mission to educate future leaders, consideration should be given to incorporating this concept in nursing curriculums. Perhaps a greater focus and understanding of the power as knowing model may help to foster the development of leadership skills in future nursing leaders.

It was also noted that in the initial development of the Power as Knowing Participation and Change Test, Barrett (1983) attempted to measure the concept across environmental contexts. However, subsequent analysis revealed that the instruments were not distinguishing between environmental contexts and references to environmental contexts were later dropped. Given the integral nature of the human-environmental mutual process, it is apparent that the concept is valid, albeit difficult to measure. While power

as knowing accounted for 35.7% of the variance on leadership, approximately 64% of the variance on leadership was not explained. The implications for Rogerian researchers is that some effort needs to be given to incorporating and/or developing instruments measuring the continuous mutual process of integral human and environmental fields.

Power as knowing was the only Rogerian variable to show meaningful statistical relationships with leadership style. While it may well be that creativity and time experience are not be correlated with leadership style, this runs counter to both leadership and Rogerian literature. The data in this study suggests that the instrument used in this study to measure creativity may have been measuring a construct unrelated to creativity within a leadership context. Rather than showing a preference for complex drawings, as did artists in the normative population on the Revised Art Scale (Welsh, 1980), perhaps leaders have a greater capacity to write, speak or interact with others in creative ways. These alternative ways of viewing creativity have implications for future research on creativity and leadership style.

It is fair to say that time experience is a difficult abstract concept to understand. Measuring the concept and then interpreting the data present equally formidable challenges. To a large extent, this no doubt is rooted in

unchallenged assumptions that we have about time that are constantly being reinforced. For example, we look back in our calendars and look forward to completing a dissertation. It is difficult to relate to a nonlinear definition of time because most of our life experiences are developed out of a "Newtonian" worldview.

Rogers (1992) describes manifestations of relative diversity of time experience as: time experienced as slower, time experienced as faster, and timelessness. While perhaps this description is a good starting point, what are the sets of human-environmental conditions that allow individuals to resonate with different states of time experience? Is the more diverse individual one that experiences a timelessness or is it the individual who has the capacity to experience time as both slow and fast who is more diverse? Are there other manifestations of relative diversity of time experience; in addition to time experienced as slower, faster, timelessness, which have not yet to be described or investigated?

According to Rogers (1992), the development of the Science of Unitary Human Beings "portents the emergence of abstract concepts and corresponding language of specificity" (p. 29). Power as knowing participation in change, while a bit cumbersome to say, is a good example of a clear, concise Rogerian construct that is relatively easy to communicate to others. Perhaps some of the methodological problems found

in this study relative to creativity and time experience might be traced to poorly defined constructs. The task of future research is to develop instruments that qualitively define these constructs so that rigorous research can be pursued and replicated.

Limitations

Since the final sample was on a voluntary basis, it is not known if this group was representative of all baccalaureate and higher degree nurse educators. Therefore, caution must be exercised when extending findings to nurse educators or other groups outside the sample population. In addition, the length of time needed to complete the instruments may have been a significant deterrent to participation in the study and may have biased the pool of respondents.

Suggestions for Future Research

1. The study should be replicated using instruments developed from the Science of Unitary Human Beings to measure creativity and time experience.
2. The study should be replicated using other concepts developed out of the Science of Unitary Human Beings, such as caring.

3. Research methodology should incorporate measures which examine the patterns inherent in mutual human-environmental process.

4. The study should be replicated using faculty from diploma, associate, baccalaureate, and higher degree programs in order to examine environmental patterns in different educational contexts.

5. The study should be replicated incorporating a cross cultural design.

6. The study should be replicated using a rater and self-rater form (i.e. having student complete the rater form and faculty complete the self-rater form).

7. Given the correlation between power as knowing and leadership style, consideration should be given to incorporating theory related to power as knowing into nursing curriculums and research conducted on its effectiveness in promotion leadership skills.

8. Faculty leadership style should be correlated with student and/or institutional outcome measures.

9. While the Rogerian concept of pandimensionality connotes a non-linear reality, the Rogerian principle of resonancy allows for lower to higher wave frequencies, suggesting linearity. As these two concepts are mutually exclusive, clarification of the model is needed.

In conclusion, the purpose of this research was to begin to frame transactional and transformational leadership

theory (Bass, 1985; Burns, 1978) within the context of Martha Rogers' Science of Unitary Human Beings (Rogers, 1970, 1986, 1989, 1990, 1992). Transactional and transformational leadership theory has been described but is not well understood. Framing transactional and transformational leadership within the context of the Science of Unitary Human Beings exposed variables which would not have been readily apparent had leadership theory been examined in isolation.

Juxtaposing these two views of reality had a heuristic value as well. For example, how are creative human field patterns manifested in transactional and transformational leaders? What other variables are integral to the understanding of leadership? How should the diverse/complex nature of time experience be evaluated? What methods of investigation, perhaps yet to be developed, capture the essence of integral leadership human-environmental field pattern manifestations. In addition, information obtained on the Power as Knowing Participation in Change Test (Barrett, 1987), developed from a Rogerian perspective, gives transactional and transformational leadership a foundational theoretical structure upon which to build.

While nursing has long depended on principles from leadership/management theory to frame their conceptualization of leadership, it is hope that by blending leadership and nursing models variables of interest and

greater relevance to nursing will begin to emerge. For Rogerian scholars, hopefully this study demonstrates the utility that the Science of Unitary Human Beings has for investigating a wide variety phenomena of interest to nursing.

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APPENDIX A

Multifactor Leadership Questionnaire - Self-Rater (5X)

APPENDIX B

Sample Items for Each Factor on the Self-Rater (5X) Multifactor Leadership Questionnaire (MLQ)

APPENDIX B

Sample Items for Each Factor on the Self-Rater (5X) Multifactor Leadership Questionnaire (MLQ)

MLQ Factors	Sample Test Items
Transformational Leadership:	
Attributed Charisma (AC)	I remain calm during crisis situations.
Idealized Influence (II)	I display conviction in my beliefs, and values.
Inspirational (INSP)	I set high standards.
Intellectual Stimulation (IS)	I emphasize the value of questioning assumptions.
Individual Consideration (IC)	I spend time teaching and coaching those I lead.
Transactional Leadership:	
Contingent Reward (CR)	Those I lead earn credit with me by doing their tasks well.
Management-by-Exception Active (MBEA)	I closely monitor the performance of those I lead for errors.
Management-by-Exception Passive (MBEP)	I fail to intervene until problems become serious.
Nonleadership:	
Laissez-Faire (LF)	I take no action even when problems become chronic.

(Source: Bass & Avolio, 1991)

APPENDIX C

Multifactor Leadership Questionnaire - Self-Rater Form (5X)

Scoring Key

SCORING KEY MLQ 5X

1. AC	27. IS	53. II	79. EE
2. LF	28. MBEP	54. MBEA	80. CR
3. II	29. IC	55. INSP	81. IS
4. MBEP	30. MBEA	56. CR	82. EFF
5. INSP	31. AC	57. IS	83. EFF
6. MBEA	32. CR	58. LF	84. EFF
7. IS	33. II	59. IC	85. EFF
8. CR	34. LF	60. EE	86. SAT
9. IC	35. INSP	61. AC	87. SAT
10. LF	36. MBEP	62. CR	88. BIO
11. AC	37. IS	63. II	89. BIO
12. MBEP	38. MBEA	64. INSP	90. BIO
13. II	39. IC	65. IS	
14. MBEA	40. CR	66. IC	
15. INSP	41. AC	67. AC	
16. CR	42. LF	68. II	
17. IS	43. II	69. INSP	
18. LF	44. MBEP	70. EE	
19. IC	45. INSP	71. II	
20. MBEP	46. MBEA	72. INSP	
21. AC	47. IS	73. IS	
22. MBEA	48. CR	74. IC	
23. II	49. IC	75. II	
24. CR	50. LF	76. INSP	
25. INSP	51. AC	77. IS	
26. LF	52. MBEP	78. IC	

Legend

AC	Attributed Charisma
II	Idealized Influence
INSP	Inspirational Leadership
IS	Intellectual Stimulation
IC	Individual Consideration
CR	Contingent Reward
MBEA	Management-by-Exception (Active)
MBEP	Management-by-Exception (Passive)
LF	Laissez-faire Leadership
EE	Extra Effort
EFF	Effectiveness
SAT	Satisfaction
BIO	Biographical

APPENDIX D

The Revised Art Scale

APPENDIX E

Revised Art Scale Scoring Key

APPENDIX E

Revised Art Scale Scoring Key

LIKE (30)	DISLIKE (30)
4	2
5	3
6	7
9	11
12	16
13	18
14	22
15	23
21	27
24	37
25	38
28	39
30	40
31	41
36	42
43	48
44	51
46	52
49	55
50	56
60	59
68	61
69	62
70	63
76	64
77	65
80	66
83	71
84	75
85	81

APPENDIX F

Power As Knowing Participation in Change Test - Version II

APPENDIX G

Power As Knowing Participation in Change Test - Version II

Scoring Key

APPENDIX H

Time Metaphor Test

APPENDIX I

Time Metaphor Test Clusters

APPENDIX I

TIME METAPHOR TEST CLUSTERS

Vectorial (Dynamic-Hasty) Cluster

a dashing waterfall
a speeding train
a fast-moving shuttle
a galloping horseman
a fleeing thief
a space ship in flight
a whirligig

Oceanic (Naturalistic-Passive) Cluster

a vast expanse of sky
a quiet, motionless ocean
a road leading over a hill
drifting clouds
wind-driven sands
the Rock of Gibraltar
budding leaves

Humanistic Cluster

a string of beads
a winding spool
a burning candle
an old woman spinning
an old man with a staff
a devouring monster
a tedious song
a large revolving wheel

Three metaphors occupy intermediate spaces between the clusters including:

Humanistic and Oceanic: a stairway leading upward

Dynamic-Hasty and Humanistic: marching feet

Dynamic-Hasty and Oceanic: the bird in flight

APPENDIX J

Cover Letter

APPENDIX J

Cover Letter

January 10, 1993

Dear Professor :

I am writing to invite you to participate in a study of leadership characteristic of Nursing faculty. The research is being conducted as part of my doctoral degree requirements at Teachers College, Columbia University. Your School of Nursing was selected from a random list of baccalaureate and higher degree Schools of Nursing provided by the American Association of Colleges of Nursing.

Participation in the study is voluntary and anonymity of subjects will be maintained. Data will be reported in aggregate form. By returning the research instruments, you are consenting to participate in the study. Because of procedures established to protect anonymity, you may withdraw from participation until the research instruments are returned. While it is hoped that the results of this study will add to the understanding of leadership, there are no anticipated benefits or risks to participants.

There are five questionnaires (enclosed) to be completed including: the Multifactor Leadership Questionnaire, the Barron-Welsh Art Scale, the Power as Knowing Participation in Change Test, the Time Metaphor Test, and a demographic form. Please complete the questionnaires in the order in which you receive them (the order of the questionnaires may differ than the sequence listed above). Directions for completing each questionnaire are provided at the beginning of each instrument. It is expected that it will take approximately 45 minutes to complete all of the instruments. At the completion of the study I will mail you an abstract describing the results.

Please mail your completed instruments directly to me in the enclosed envelope. Also, please return the post-card (enclosed in the return envelope) separately when you mail the questionnaires.

If you have any questions about the directions, you may contact me at (717) 992-6094 (home) or (717) 424-3568 (office). Thank you in advance for your willingness to participate.

Cordially

Mark Kilker, RN, MSN

APPENDIX K

First Follow-up Letter

APPENDIX K

First Follow-up Letter

October 11, 1993

Professor Name~
Dept/Division~
School~
Address?~

Dear Professor Last Name~:

I am writing to follow up on an invitation to participate in a study of leadership which I recently sent to you. Perhaps the instruments were misplaced or you have yet to find the time to complete the questionnaires.

As my research sample includes nursing faculty from across the United States your participation is important. While I have heard from many individuals, your participation will provide a broader and more representative sample of nursing faculty.

If you have already returned your questionnaire, please accept my sincere thanks. If you have yet to complete the instruments, please try to find the time in your busy schedule to complete and return the packet. I would appreciate it very much if you would return the materials by October 22, 1993.

Should you have any questions about the directions or if you need a replacement packet, you may contact me at (717) 992-6094 (home), (717) 424-3568 (work) or by email on Internet at mkilker@esu.edu.

Thank you very much for your assistance with this research project.

Cordially,

Mark Kilker, RN, MSN
Doctoral Candidate
Teachers College
Columbia University

APPENDIX L

Second Follow-up Letter

APPENDIX L

Second Follow-up Letter

November 1, 1993

Professor Name~
Dept/Division~
School~
Address?~

Dear Professor Last Name~:

I am writing to follow-up again on an invitation to participate in a study of leadership characteristics which I recently sent to you. As previously mentioned, your input is important to the outcome of the study. While I continue to hear from many individuals from across the country, your participation needed to obtain a broader representative sample of nursing faculty.

If you have already returned your questionnaires, please accept my sincere thanks. If you have yet to complete the instruments, please try to find the time in your busy schedule to complete and return the questionnaires. I expect to bring closure to the data collection phase of the study on November 12, 1993.

Should you have any question, you may contact me at (717) 992-6094 (home) or (717) 424-3568 (work) or by email on Internet at mkilker@esu.edu.

Again, thank you very much for your assistance with this research project.

Cordially,

Mark Kilker, RN, MSN
Doctoral Candidate
Teachers College
Columbia University

APPENDIX M

Demographic and Descriptive Form

DEMOGRAPHIC and DESCRIPTIVE INFORMATION FORM

Directions: Please indicate your response directly in the space provided. This information will be used for statistical purposes only.

1. Earned degrees (please check all that apply):

[ ] Diploma
[ ] ADN
[ ] BSN
[ ] MSN
[ ] Doctorate
[ ] Other _____

2. Type of School:

[ ] Private
[ ] State

3. Type of Nursing programs offered (please check all that apply):

[ ] Associate
[ ] Baccalaureate
[ ] Masters
[ ] Doctoral
[ ] Other _____

4. Are faculty at your institution organized in a collective bargaining unit?

[ ] Yes [ ] No

5. What is the approximate total enrollment at your institution? _____

6. What is your present faculty rank:

[ ] Instructor
[ ] Assistant Professor
[ ] Associate Professor
[ ] Full Professor

7. What is your age?_____

8. What is your gender?

[ ] Female [ ] Male

9. Your area of specialization: _____

10. Approximate # of full-time faculty in your Nursing School or Department: _____

11. Length of Service:

yrs.

_____ How long you been licensed as an RN?
_____ How long have you held your present position?
_____ How long have you held a position in nursing education?
_____ If you have ever held a titled administrative position(s) in nursing education, what is the total length of time that you held that/those position(s)?

12. How much thinking do you do about things you want to do or accomplish in the future versus events and satisfying experiences you have had in the past? Check the one phrase that best describes you.

[ ] much more thinking about the future than the past.
[ ] somewhat more thinking about the future than the past.
[ ] about equally divided between the future, present, and the past.
[ ] the present dominates my thinking much more than either the future or the past.
[ ] somewhat more thinking about the past than the future.
[ ] much more thinking about the past than the future.

THANK YOU FOR PARTICIPATING !

APPENDIX N

Internal Consistency Analysis Results

for the

1. Multifactor Leadership Questionnaire
2. Revised Art Scale
3. Power As Knowing Participation in Change Test
4. Time Metaphor Test

Table N - 1

Summary of Internal Consistency Analysis of the Multifactor Leadership Questionnaire

Scale/ Item	Corrected Item-Total *r*	R^2	Alpha if Item Deleted
Charisma			
01	.1963	.2364	.8222
11	.2116	.1128	.8216
21	.4981	.3399	.8034
31	.3566	.2831	.8120
41	.4621	.2950	.8068
51	.4560	.3281	.8062
61	.6127	.5002	.7973
67	.4790	.3804	.8048
03	.4044	.2137	.8094
13	.4410	.2886	.8072
23	.4282	.3010	.8082
33	.2803	.2028	.8154
43	.4135	.2779	.8094
53	.4839	.3295	.8045
63	.5152	.3287	.8043
68	.3086	.1883	.8171
71	.3667	.2599	.8116
75	.4854	.3598	.8070
Scale alpha = .8181			
Inspiration			
05	.2683	.1043	.7897
15	.4971	.3528	.7645
25	.5032	.3447	.7635
35	.5579	.3846	.7582
45	.4988	.2942	.7651
55	.2564	.1250	.8047
64	.6177	.4095	.7509
69	.4824	.2870	.7668
72	.5862	.3878	.7513
76	.4157	.1920	.7751
Scale alpha = .7877			

Table N - 1 continues

Scale/ Item	Corrected Item-Total *r*	R^2	Alpha if Item Deleted
Intellectual Stimulation			
07	.5441	.3390	.8099
17	.5251	.3142	.8118
27	.5491	.3584	.8099
37	.4810	.3385	.8172
47	.4307	.2512	.8207
57	.6175	.4094	.8033
65	.4257	.2748	.8214
73	.5500	.3700	.8094
77	.6715	.5022	.7960
81	.3698	.1720	.8256
Scale alpha = .8284			
Individualized Consideration			
09	.3875	.2354	.7657
19	.4291	.2733	.7601
29	.3711	.1677	.7691
39	.6141	.4030	.7351
49	.3468	.1651	.7747
59	.5547	.3929	.7437
66	.4717	.2545	.7543
74	.6072	.4059	.7348
78	.4344	.2103	.7617
Scale alpha = .7769			
Contingent Reward			
08	.2080	.1763	.7824
16	.4413	.2697	.7446
24	.6542	.5213	.7058
32	.5882	.4562	.7188
40	.4725	.2917	.7388
48	.5171	.3239	.7313
56	.5039	.3740	.7363
62	.4611	.2674	.7408
80	.1514	.1423	.7745
Scale alpha = .7651			

Table N - 1 continues

Scale/ Item	Corrected Item-Total *r*	R^2	Alpha if Item Deleted
Management-by-Exception			
06	.2908	.2095	.7191
14	.3415	.3236	.7140
22	.3594	.1631	.7111
30	.4145	.3790	.7038
38	.3961	.2959	.7062
46	.4139	.2962	.7040
54	.5156	.3435	.6923
04	.2953	.2959	.7179
12	.2032	.3413	.7283
20	.3154	.3843	.7160
28	.3302	.2001	.7146
36	.3536	.4763	.7140
44	.2440	.1102	.7281
52	.3728	.4306	.7136
Scale alpha = .7282			
Laissez-Faire			
02	.3336	.1600	.6065
10	.4025	.2100	.5972
18	.1655	.0510	.6591
26	.4515	.3361	.5753
34	.2443	.1377	.6344
42	.4514	.2372	.5775
50	.4728	.2724	.5716
58	.2576	.0920	.6273
Scale alpha = .6382			

Table N - 2
Summary of Internal Consistency Analysis of the Revised Art Scale

Item	Corrected Item-Total *r*	R^2	Alpha if Item Deleted
04	.2582	.2629	.9389
05	.2351	.4522	.9391
06	.3747	.4125	.9383
09	.3226	.3985	.9386
12	.3453	.3328	.9384
13	.3131	.2907	.9386
14	.0939	.3048	.9399
15	.3400	.4942	.9385
21	.3117	.3538	.9387
24	.5337	.5562	.9373
25	.4365	.4403	.9379
28	.4800	.4545	.9377
30	.1516	.3138	.9396
31	.4534	.4662	.9378
36	.5219	.5990	.9374
43	.1931	.3263	.9391
44	.3468	.4544	.9384
46	.4261	.3925	.9380
49	.4409	.4951	.9379
50	.3764	.3991	.9382
60	.4263	.4051	.9380
68	.4911	.4604	.9376
69	.4054	.4372	.9381
70	.4189	.4662	.9380
76	.3572	.4135	.9384
77	.4510	.5176	.9378
80	.3240	.3643	.9386
83	.2570	.4130	.9390
84	.4418	.4813	.9379
85	.5191	.5745	.9374
02	.3636	.4242	.9383
03	.2227	.3557	.9392
07	.4994	.4704	.9375
11	.4148	.4850	.9381
16	.4699	.4034	.9377
18	.6350	.6811	.9367
22	.3671	.4228	.9383
23	.5413	.5256	.9373
27	.6233	.7076	.9368
37	.4087	.3936	.9381
38	.6405	.7223	.9367
39	.2591	.3369	.9388

Table N - 2 continues

Item	Corrected Item-Total *r*	R^2	Alpha if Item Deleted
40	.3325	.4285	.9385
41	.5071	.5073	.9375
42	.5372	.5629	.9373
48	.6483	.7867	.9367
51	.7306	.7784	.9362
52	.4975	.5419	.9375
55	.2905	.3684	.9386
56	.6212	.7273	.9368
59	.7248	.8400	.9362
61	.6686	.7545	.9365
62	.5826	.5749	.9371
63	.5875	.5935	.9370
64	.4551	.6277	.9378
65	.3756	.3963	.9383
66	.4778	.5947	.9377
71	.6452	.7025	.9367
75	.6429	.6975	.9367
81	.5501	.6617	.9372
Scale alpha = .9389			

Table N - 3

Summary of Internal Consistency Analysis of the Power as Knowing Participation in Change

Scale/ Item	Corrected Item-Total *r*	R^2	Alpha if Item Deleted
Awareness			
01	.6641	.4714	.9170
02	.6824	.5084	.9168
03	.6133	.4625	.9190
04	.7249	.5774	.9147
05	.6871	.6188	.9163
06	.7351	.6508	.9139
07	.6025	.4240	.9205
08	.6911	.5135	.9158
09	.6603	.5060	.9171
10	.7555	.5867	.9136
11	.6611	.4832	.9179
12	.7351	.5847	.9149
Scale alpha = .9229			
Choices			
01	.5929	.4444	.8936
02	.6931	.5710	.8866
03	.6765	.5901	.8874
04	.5902	.5954	.8915
05	.4813	.3255	.8974
06	.6132	.4498	.8911
07	.6664	.5650	.8875
08	.6504	.5713	.8893
09	.6404	.5703	.8891
10	.6526	.4652	.8881
11	.6271	.4415	.8895
12	.6251	.4588	.8903
Scale alpha = .8984			

Table N - 3 continues

Scale/ Item	Corrected Item-Total *r*	R^2	Alpha if Item Deleted
Freedom to Act Intentionally			
01	.6795	.5012	.9064
02	.5824	.4388	.9110
03	.4837	.3511	.9159
04	.6927	.5277	.9059
05	.7256	.5808	.9042
06	.7550	.6729	.9035
07	.6175	.5288	.9093
08	.4801	.3302	.9157
09	.7349	.6023	.9041
10	.6688	.5724	.9076
11	.7987	.6814	.9019
12	.7222	.6063	.9044
Scale alpha = .9146			
Involvement in Creating Change			
01	.6738	.5285	.9122
02	.6654	.5191	.9122
03	.6972	.5394	.9107
04	.4487	.2525	.9220
05	.6347	.4916	.9146
06	.7297	.6437	.9099
07	.6836	.5356	.9118
08	.6998	.5620	.9106
09	.7118	.5621	.9102
10	.7759	.6848	.9085
11	.7336	.5889	.9095
12	.6600	.4952	.9124
Scale alpha = .9188			

Table N - 4

Summary of Internal Consistency Analysis of the Time Metaphor Test

Scale/ Item	Corrected Item-Total *r*	R^2	Alpha if Item Deleted
Vectorial			
02	.6010	.4291	.7922
07	.6731	.5703	.7806
09	.7323	.6445	.7678
13	.4507	.2286	.8161
14	.4387	.2255	.8188
21	.4323	.2138	.8191
25	.6277	.4064	.7877
Scale alpha = .8222			
Oceanic			
03	.1646	.1237	.7193
04	.4111	.2349	.6600
10	.5252	.3677	.6275
15	.1710	.0490	.7172
17	.5377	.3688	.6254
19	.5610	.3587	.6178
20	.4754	.3074	.6420
Scale alpha = .6956			
Humanistic			
01	.0794	.1379	.6806
05	.4872	.4616	.5737
08	.2719	.1921	.6312
11	.2099	.0806	.6480
16	.4796	.3595	.5767
22	.3210	.2825	.6188
23	.4989	.4693	.5746
24	.4169	.2541	.5923
Scale alpha = .6454			

APPENDIX O

Complete Data Sets

for

Tables 7 - 21

Table 7

Correlations between Leadership Factors and Creativity

Transformational		Transactional		Non-Leadership	
Charisma	-.05	Contingent Reward	-.07	Laissez-Faire	.02
Inspiration	-.02	Management-by-Exception	-.12 *		
Intellectual Stimulation	.10 *				
Individual. Consideration	-.10				

Note. All correlations are based on $N = 417$.

* $p < .05$

Table 8

Summary of Stepwise Regression of Creativity on Leadership Factors

Step	Predictor	R	R^2	F (R^2)	R^2 Change	F (R^2 Change)	β	r
1	Manage-by-Except	.123	.015	6.36 *	.0151	6.36 *	-.133	-.12
2	Indiv. Consider.	.170	.029	6.14 **	.0137	5.85 *	-.162	-.10
3	Intellect. Stim.	.229	.053	7.63 **	.0237	10.31 **	.218	.10
4	Charisma	.237	.056	6.14 **	.0038	1.64	-.075	-.05
5	Laissez-faire	.242	.059	5.11 **	.0023	1.01	.057	.02
6	Cont. Reward	.242	.059	4.25 **	.0000	0.02	-.007	-.07
7	Inspiration	.242	.059	3.64 **	.0000	0.01	-.006	-.02

* $p < .05$. ** $p < .005$.

Table 9

Correlations between Leadership Factors and Power

	Power			
Leadership	Awareness	Choices	Freedom to Act	Involve. Change
Charisma	.40 *	.39 *	.38 *	.39 *
Inspiration	.41 *	.46 *	.45 *	.41 *
Intellectual Stimulation	.40 *	.39 *	.39 *	.41 *
Individualized Consideration	.33 *	.32 *	.33 *	.28 *
Contingent Reward	.02	-.01	.06	.05
Management-by-Exception	-.35 *	-.33 *	-.32 *	-.28 *
Laissez-Faire	-.26 *	-.27 *	-.27 *	-.25 *

Note. Correlations are based on $N = 364$.

* $p < .0005$.

Table 10

Summary of Canonical Correlation Analysis: Leadership and Power

Squared Multiple Correlations of Each Variable with All Other Variables in the Same Set

Set 1: Leadership	R^2	Set 2: Power	R^2
Charisma	0.62142	Awareness	0.66550
Inspiration	0.67719	Choices	0.65258
Intellectual Stim.	0.52593	Freedom to Act	0.70156
Indiv. Consider.	0.52814	Involve. in Change	0.58155
Contingent Reward	0.33252		
Manage.-by-Except.	0.31699		
Laissez-Faire	0.23032		

Eigenvalues and Canonical Correlations

Eigenvalue	Canonical Correlation	Number of Eigenvalues	Bartlett's Test for Remaining Eigenvalues		
			χ^2	df	p
			181.16	28	0.0000
0.35735	0.59779	1	23.32	18	0.1787
0.02970	0.17234	2	12.55	10	0.2498
0.02077	0.14413	3	5.06	4	0.2814
0.01407	0.11861				

Table 10 continues

Canonical Variable Loadings

Set/Variable	Canonical Variable 1	2	3	4
Set 1				
Charisma	0.734	0.235	-0.076	0.039
Inspiration	0.811	-0.258	-0.276	0.155
Intellectual Stim.	0.738	0.428	-0.317	0.071
Indiv. Consideration	0.588	-0.026	0.272	0.417
Contingent Reward	0.042	0.082	-0.459	0.737
Management-by-Exception	-0.604	-0.056	-0.397	-0.179
Laissez-Faire	-0.491	0.113	0.074	-0.171
Set 2				
Awareness	0.891	0.260	0.343	0.145
Choices	0.929	-0.274	0.054	-0.244
Freedom to Act Intent.	0.882	-0.151	-0.098	0.436
Involvement in Change	0.845	0.288	-0.446	-0.063

Squared Multiple Correlations of Each Variable with All Variables in the Other Set

Set/Variable	R^2	Adjusted R^2	F	df	p
Set 1					
Charisma	0.194492	0.185517	21.67	4,359	0.0000
Inspiration	0.239125	0.230647	28.21	4,359	0.0000
Intellect. Stim.	0.202358	0.193471	22.77	4,359	0.0000
Indiv. Consider.	0.127632	0.117913	13.13	4,359	0.0000
Cont. Reward	0.012842	0.001843	1.17	4,359	0.3248
Manage-by-Excp.	0.134172	0.124525	13.91	4,359	0.0000
Laissez-Faire	0.086954	0.076781	8.55	4,359	0.0000
Set 2					
Awareness	0.288440	0.274449	20.62	7,356	0.0000
Choices	0.311229	0.297685	22.98	7,356	0.0000
Freedom to Act	0.281313	0.267182	19.91	7,356	0.0000
Involve. Change	0.261944	0.247432	18.05	7,356	0.0000

Table 11

Summary of Stepwise Regression of Leadership Factors on Power

Step	Predictor	R	R^2	F (R^2)	R^2 Change	F (R^2 Change)	β	r
Dependent variable:	Charisma							
1	Awareness	.399	.159	68.37 **	.1589	68.37 **	.159	.40
2	Involvement	.431	.186	41.12 **	.0267	11.82 **	.151	.39
3	Choices	.440	.194	28.82 **	.0081	3.62	.132	.39
4	Freedom to Act	.441	.195	21.67 **	.0009	0.38	.054	.38
Dependent variable:	Inspiration							
1	Choices	.456	.208	94.97 **	.2078	94.97 **	.223	.46
2	Freedom to Act	.483	.233	54.82 **	.0251	11.83 **	.169	.45
3	Involvement	.489	.239	37.60 **	.0056	2.66	.110	.41
4	Awareness	.489	.239	28.21 **	.0005	0.25	.040	.41
Dependent variable:	Intellectual Stimulation							
1	Involvement	.414	.171	74.91 **	.1714	74.91 **	.220	.41
2	Awareness	.445	.198	44.64 **	.0268	12.08 **	.154	.40
3	Choices	.449	.202	30.32 **	.0034	1.55	.083	.39
4	Freedom to Act	.450	.202	22.77 **	.0006	0.29	.046	.39
Dependent variable:	Individualized Consideration							
1	Awareness	.333	.111	45.07 **	.1107	45.07 **	.150	.33
2	Freedom to Act	.351	.123	25.34 **	.0124	5.10 *	.124	.33
3	Choices	.357	.128	17.55 **	.0045	1.84	.105	.32
4	Involvement	.357	.128	13.13 **	.0001	0.03	.013	.28

Table 11 Continues

Step	Predictor	R	R^2	F (R^2)	R^2 Change	F (R^2 Change)	β	r
Dependent variable: Contingent Reward								
1	Freedom to Act	.065	.004	1.51	.0042	1.51	.156	.06
2	Choices	.104	.011	1.96	.0066	2.40	-.125	-.01
3	Involvement	.109	.012	1.45	.0012	0.43	.059	.05
4	Awareness	.113	.013	1.17	.0009	0.33	-.052	.02
Dependent variable: Management-by-Exception								
1	Awareness	.347	.120	49.51 **	.1203	49.51 **	-.189	-.35
2	Choices	.364	.132	27.55 **	.0121	5.04 *	-.131	-.33
3	Freedom to Act	.366	.134	18.57 **	.0016	0.66	-.062	-.32
4	Involvement	.366	.134	13.91 **	.0002	0.07	-.019	-.28
Dependent variable: Laissez-Faire								
1	Choices	.272	.074	28.97 **	.0741	28.97 **	-.119	-.27
2	Freedom to Act	.291	.085	16.67 **	.0105	4.12 *	-.104	-.27
3	Involvement	.293	.086	11.31 **	.0016	0.61	-.054	-.25
4	Awareness	.295	.087	8.55 **	.0009	0.34	-.051	-.26

* $p < .05$. ** $p < .005$.

Table 12

Correlations between Leadership Factors and Time Experience

	Time Experience		
Leadership	Vectorial	Oceanic	Humanistic
Charisma	-.04	-.05	.03
Inspiration	-.02	-.03	.07
Intellectual Stimulation	-.06	-.10 *	.03
Individual. Consideration	-.02	-.05	.03
Contingent Reward	-.03	-.02	-.05
Management-by-Exception	-.06	-.03	-.16 **
Laissez-Faire	.04	-.03	-.06

Note. All correlations are based on $N = 414$.

* $p < .05$. ** $p < .001$.

Table 13

Summary of Canonical Correlation Analysis: Leadership and Time Experience

Squared Multiple Correlations of Each Variable with All Other Variables in the Same Set

Set 1: Leadership	R^2	Set 2: Time	R^2
—			
Charisma	0.64505	Vectorial	0.17076
Inspiration	0.68919	Oceanic	0.25588
Intellectual Stim.	0.51771	Humanistic	0.27658
Indiv. Consider.	0.55324		
Contingent Reward	0.31945		
Manage.-by-Except.	0.35031		
Laissez-Faire	0.28155		

Eigenvalues and Canonical Correlations

Eigenvalue	Canonical Correlation	Number of Eigenvalues	Bartlett's Test for Remaining Eigenvalues		
			χ^2	*df*	*p*
			29.69	21	0.0983
0.03460	0.18601	1	15.34	12	0.2232
0.03191	0.17863	2	2.13	5	0.8310
0.00521	0.07219				

Table 13 continues

Canonical Variable Loadings

Set/Variable	Canonical Variable 1	2	3
Set 1			
Charisma	-0.571	0.106	-0.103
Inspiration	-0.480	0.326	-0.205
Intellectual Stim.	-0.937	0.096	-0.030
Indiv. Consideration	-0.498	0.147	0.128
Contingent Reward	-0.023	-0.306	0.008
Management-by-Exception	0.232	-0.892	0.126
Laissez-Faire	0.236	-0.233	0.826
Set 2			
Vectorial	0.411	0.521	0.748
Oceanic	0.590	0.258	-0.765
Humanistic	-0.095	0.957	-0.274

Squared Multiple Correlations of Each Variable with All Variables in the Other Set

Set/Variable	R^2	Adjusted R^2	F	df	p
Set 1					
Charisma	0.011701	0.004470	1.62	3,410	0.1846
Inspiration	0.011570	0.004337	1.60	3,410	0.1889
Intellect. Stim.	0.030664	0.023571	4.32	3,410	0.0051
Indiv. Consider.	0.009358	0.002109	1.29	3,410	0.2771
Cont. Reward	0.002999	-0.004297	0.41	3,410	0.7452
Manage-by-Excp.	0.027318	0.020201	3.84	3,410	0.0099
Laissez-Faire	0.007225	-0.000039	0.99	3,410	0.3952
Set 2					
Vectorial	0.017425	0.000484	1.03	7,406	0.3798
Oceanic	0.017212	0.000267	1.02	7,406	0.3855
Humanistic	0.029923	0.013197	1.79	7,406	0.1486

Table 14

Summary of Stepwise Regression of Leadership Factors on Time Experience

Step	Predictor	R	R^2	F (R^2)	R^2 Change	F (R^2 Change)	β	r
Dependent variable: Charisma								
1	Oceanic Time	.052	.003	1.12	.0027	1.12	-.106	-.05
2	Humanistic Time	.076	.006	1.20	.0031	1.29	.094	.03
3	Vectorial Time	.108	.012	1.62	.0059	2.44	-.084	-.04
Dependent variable: Inspiration								
1	Humanistic Time	.068	.005	1.93	.0047	1.93	.120	.07
2	Oceanic Time	.090	.008	1.67	.0034	1.42	-.087	-.03
3	Vectorial Time	.108	.012	1.60	.0035	1.45	-.065	-.02
Dependent variable: Intellectual Stimulation								
1	Oceanic Time	.097	.009	3.89 *	.0093	3.89 *	-.179	-.10
2	Vectorial Time	.129	.017	3.45 *	.0072	3.00	-.135	-.06
3	Humanistic Time	.175	.031	4.32 **	.0141	5.98 *	.140	.03
Dependent variable: Individualized Consideration								
1	Oceanic Time	.055	.003	1.25	.0030	1.25	-.102	-.05
2	Humanistic Time	.080	.006	1.33	.0034	1.41	.087	.03
3	Vectorial Time	.097	.009	1.29	.0029	1.22	-.060	-.02
Dependent variable: Contingent Reward								
1	Humanistic Time	.052	.003	1.12	.0027	1.12	-.047	-.05
2	Vectorial Time	.055	.003	0.62	.0003	0.12	-.018	-.03
3	Oceanic Time	.055	.003	0.41	.0000	0.00	-.002	-.02

Table 14 Continues

Step	Predictor	R	R^2	F (R^2)	R^2 Change	F (R^2 Change)	β	r
Dependent variable: Management-by-Exception								
1	Humanistic Time	.159	.025	10.69 **	.0253	10.69 **	-.177	-.16
2	Oceanic Time	.165	.027	5.77 **	.0020	0.85	.048	-.02
3	Vectorial Time	.165	.027	3.84 *	.0000	0.01	-.004	-.06
Dependent variable: Laissez-Faire								
1	Humanistic Time	.060	.004	1.51	.0036	1.51	-.083	-.06
2	Vectorial Time	.084	.007	1.46	.0034	1.41	.065	.04
3	Oceanic Time	.085	.007	1.00	.0002	0.08	.016	-.03

* $p < .05$. ** $p < .005$.

Table 15

Correlations between Leadership Factors and Other Psychological Variables

	Charisma	Inspi-ration	Intel. Stim.	Indiv. Consid.	Cont. Reward	Manage. Except.	Laissez-Faire
Creativity	-05	-02	10 *	-10	-07	-12 *	02
Awareness	40 **	41 **	40 **	33 **	02	-35 **	-26 **
Choices	39 **	46 **	39 **	32 **	-01	-33 **	-27 **
Freedom to Act	38 **	45 **	39 **	33 **	06	-32 **	-27 **
Involve. in Change	39 **	41 **	41 **	28 **	05	-28 **	-25 **
Vectorial Time	-04	-02	-06	-02	-03	-06	04
Oceanic Time	-05	-03	-10 *	-05	-02	-02	-03
Human-istic Time	03	07	03	03	-05	-16 *	-06

Note. Decimal points omitted. Correlations are based on $N = 414$.

* $p < .05$ ** $p < .0005$.

Table 16

Summary of Canonical Correlation Analysis:
Leadership and Creativity, Power, and Time Experience

Squared Multiple Correlations of Each Variable with All Other Variables in the Same Set

Set 1: Leadership	R^2	Set 2: Other Vars.	R^2
—			
Charisma	0.62283	Creativity	0.01621
Inspiration	0.67719	Awareness	0.67265
Intellectual Stim.	0.52598	Choices	0.65750
Indiv. Consider.	0.52612	Freedom to Act	0.72503
Contingent Reward	0.32947	Involve. in Change	0.59744
Manage.-by-Except.	0.31621	Vectorial Time	0.18993
Laissez-Faire	0.22806	Oceanic Time	0.26705
		Humanistic Time	0.31863

Eigenvalues and Canonical Correlations

Eigenvalue	Canonical Correlation	Number of Eigenvalues	Bartlett's Test for Remaining Eigenvalues		
			χ^2	df	p
			218.19	56	0.0000
0.36146	0.60122	1	60.74	42	0.0306
0.07411	0.27222	2	33.71	30	0.2925
0.04940	0.22226	3	15.93	20	0.7210
0.02714	0.16475	4	6.27	12	0.9019
0.01205	0.10976	5	2.02	6	0.9182
0.00334	0.05775	6	0.84	2	0.6560
0.00240	0.04898				

Table 16 continues

Canonical Variable Loadings

	Canonical Variable						
Set/Variable	1	2	3	4	5	6	7
Set 1							
Charisma	-.73	-.38	-.27	.18	.01	-.26	-.39
Inspiration	-.81	-.30	.03	-.23	-.16	.23	-.36
Intel. Stim.	-.75	.13	-.56	-.02	-.04	.28	-.16
Indiv. Cons.	-.58	-.54	-.08	.44	-.15	.38	-.09
Cont. Reward	-.04	-.32	-.32	-.01	-.75	.07	-.48
Manage. Except.	.61	-.51	-.40	-.29	.20	.14	-.26
Laissez-Faire	.49	.19	.02	.13	.27	.34	-.72
Set 2							
Creativity	-.09	.89	.02	-.21	.02	.29	.15
Awareness	-.89	.02	-.00	.43	.01	-.10	.12
Choices	-.92	-.12	.21	-.14	.24	.10	-.01
Freedom to Act	-.89	-.10	.06	.03	-.42	.11	-.03
Involve. Change	-.85	.06	-.27	-.17	-.06	-.30	-.29
Vectorial Time	-.01	.22	.67	.23	-.17	-.13	-.62
Oceanic Time	.09	.04	.30	-.25	-.20	-.57	.68
Humanistic Time	-.16	.35	.39	.09	-.26	-.18	.06

Squared Multiple Correlations of Each Variable with All Variables in the Other Set

Set/Variable	R^2	Adjusted R^2	F	df	p
Set 1					
Charisma	0.209314	0.191292	11.61	8,351	0.0000
Inspiration	0.244298	0.227074	14.18	8,351	0.0000
Intellect. Stim.	0.221494	0.203751	12.48	8,351	0.0000
Indiv. Consider.	0.148342	0.128931	7.64	8,351	0.0000
Cont. Reward	0.020433	-0.001894	0.92	8,351	0.4946
Manage-by-Excp.	0.163964	0.144909	8.60	8,351	0.0000
Laissez-Faire	0.091650	0.070947	4.43	8,351	0.0001
Set 2					
Creativity	0.063394	0.044769	3.40	7,352	0.0016
Awareness	0.288310	0.274157	20.37	7,352	0.0000
Choices	0.312100	0.298420	22.81	7,352	0.0000
Freedom to Act	0.291683	0.277597	20.71	7,352	0.0000
Involve. Change	0.263031	0.248376	17.95	7,352	0.0000
Vectorial Time	0.028422	0.009101	1.47	7,352	0.1764
Oceanic Time	0.011655	-0.007999	0.59	7,352	0.7616
Humanistic Time	0.026672	0.007316	1.38	7,352	0.2135

Table 17

Summary of Stepwise Regression of Leadership Factors on Creativity, Power, and Time Experience

Step	Predictor	R	R^2	F (R^2)	R^2 Change	F (R^2 Change)	β	r
Dependent variable:	Charisma							
1	Choices	.400	.160	68.19 **	.1600	68.19 **	.132	.40
2	Awareness	.429	.184	40.22 **	.0239	10.45 **	.139	.40
3	Involvement	.442	.196	28.83 **	.0116	5.13 *	.123	.39
4	Creativity	.449	.201	22.34 **	.0056	2.51	-.068	-.07
5	Vectorial Time	.452	.204	18.13 **	.0028	1.24	-.059	-.04
6	Freedom to Act	.455	.207	15.35 **	.0030	1.35	.112	.40
7	Oceanic Time	.457	.209	13.27 **	.0018	0.82	-.031	-.07
8	Humanistic Time	.458	.209	11.62 **	.0005	0.24	-.028	.01
Dependent variable:	Inspiration							
1	Choices	.461	.212	96.42 **	.2122	96.42 **	.236	.46
2	Freedom to Act	.487	.237	55.43 **	.0248	11.59 **	.194	.45
3	Involvement	.491	.241	37.69 **	.0041	1.93	.094	.41
4	Humanistic Time	.493	.243	28.43 **	.0015	0.71	-.030	.05
5	Vectorial Time	.493	.243	22.78 **	.0008	0.39	-.028	-.01
6	Creativity	.494	.244	19.00 **	.0006	0.30	-.025	-.02
7	Awareness	.494	.244	16.26 **	.0002	0.10	.026	.41
8	Oceanic Time	.494	.244	14.18 **	.0000	0.00	.003	-.05

Table 17 continues

Step	Predictor	R	R^2	F (R^2)	R^2 Change	F (R^2 Change)	β	r
Dependent variable:	Intellectual Stimulation							
1	Involvement	.416	.173	74.83 **	.1729	74.83 **	.196	.42
2	Awareness	.446	.199	44.31 **	.0260	11.58 **	.142	.40
3	Vectorial Time	.454	.206	30.80 **	.0072	3.24	-.110	-.07
4	Creativity	.460	.212	23.81 **	.0054	2.45	.073	.07
5	Freedom to Act	.464	.216	19.47 **	.0042	1.89	.099	.40
6	Oceanic Time	.469	.220	16.59 **	.0043	1.93	-.067	-.09
7	Choices	.471	.222	14.31 **	.0015	0.68	.066	.39
8	Humanistic Time	.471	.222	12.48 **	.0000	0.01	.005	.03
Dependent variable:	Individualized Consideration							
1	Freedom to Act	.336	.113	45.43 **	.1126	45.43 **	.159	.34
2	Creativity	.354	.125	25.58 **	.0127	5.20 *	-.112	-.11
3	Awareness	.372	.138	19.00 **	.0126	5.22 *	.137	.33
4	Choices	.379	.143	14.85 **	.0054	2.23	.114	.32
5	Humanistic Time	.382	.146	12.09 **	.0025	1.04	-.021	-.00
6	Vectorial Time	.383	.147	10.12 **	.0009	0.39	-.047	-.02
7	Oceanic Time	.385	.148	8.75 **	.0015	0.60	-.045	-.07
8	Involvement	.385	.148	7.64 **	.0001	0.03	-.014	.27
Dependent variable:	Contingent Reward							
1	Creativity	.079	.006	2.27	.0063	2.27	-.072	-.08
2	Freedom to Act	.101	.010	1.83	.0038	1.39	.168	.06
3	Choices	.123	.015	1.82	.0049	1.79	-.110	-.00
4	Vectorial Time	.131	.017	1.55	.0021	0.76	-.044	-.04
5	Oceanic Time	.137	.019	1.35	.0015	0.52	-.026	-.03
6	Awareness	.140	.020	1.17	.0008	0.30	-.056	.02
7	Involvement	.142	.020	1.03	.0006	0.21	.040	.05
8	Humanistic Time	.143	.020	0.92	.0004	0.13	-.023	-.04

Table 17 continues

Step	Predictor	R	R^2	F (R^2)	R^2 Change	F (R^2 Change)	β	r
Dependent variable: Management-by-Exception								
1	Awareness	.349	.122	49.59 **	.1217	49.59 **	-.194	-.35
2	Creativity	.378	.143	29.66 **	.0208	8.66 **	-.132	-.15
3	Choices	.390	.152	21.25 **	.0094	3.95 *	-.110	-.33
4	Humanistic Time	.399	.159	16.83 **	.0075	3.18	-.057	-.15
5	Vectorial Time	.403	.162	13.69 **	.0026	1.10	-.059	-.10
6	Freedom to Act	.404	.163	11.47 **	.0011	0.48	-.049	-.33
7	Involvement	.404	.164	9.83 **	.0004	0.17	-.035	-.28
8	Oceanic Time	.405	.164	8.61 **	.0004	0.17	-.023	-.01
Dependent variable: Laissez-Faire								
1	Freedom to Act	.276	.076	29.51 **	.0762	29.51 **	-.131	-.28
2	Choices	.291	.085	16.54 **	.0086	3.37	-.108	-.27
3	Vectorial Time	.296	.088	11.42 **	.0030	1.17	.037	.03
4	Involvement	.298	.089	8.67 **	.0012	0.47	-.056	-.25
5	Oceanic Time	.301	.090	7.03 **	.0013	0.52	-.047	-.02
6	Awareness	.302	.091	5.89 **	.0007	0.26	-.044	-.26
7	Humanistic Time	.302	.091	5.06 **	.0004	0.16	.022	-.04
8	Creativity	.303	.092	4.43 **	.0002	0.10	.016	.01

* $p < .05$. ** $p < .005$.

Table 18

Correlations between Demographic Variables and Psychological Variables

Psychological Variables	School Type	Highest Degree	Years as Educator
Charisma	-.14 **	.06	.04
Inspiration	-.07	.09	-.06
Intellectual Stimulation	-.06	.16 **	-.02
Individualized Consideration	-.13 *	.01	-.07
Contingent Reward	-.05	.07	-.07
Management-by-Exception	.04	-.11 *	-.01
Laissez-Faire	.13 *	.00	.07
Creativity	-.02	-.02	-.05
Awareness	-.06	.09	.05
Choices	-.04	.01	.01
Freedom to Act Intentionally	-.08	.07	.03
Involvement in Creating Change	-.10	.08	.07
Vectorial	-.03	.03	.04
Oceanic	.02	-.01	-.10
Humanistic	-.08	.01	-.05

Note. Correlations are based on *N* from 379 to 438.

* $p < .05$. ** $p < .005$.

Table 19

Summary of Canonical Correlation Analysis: Demographic Variables and Leadership, Creativity, Power, and Time Experience

Squared Multiple Correlations of Each Variable with All Other Variables in the Same Set

Set 1: Psych. Vars.	R^2	Set 2: Demographics	R^2
Charisma	0.62872	School Type	0.00401
Inspiration	0.69797	Highest Degree	0.09933
Intellectual Stim.	0.55667	Years as Educator	0.10195
Indiv. Consider.	0.54112		
Contingent Reward	0.35191		
Manage.-by-Except.	0.36656		
Laissez-Faire	0.25017		
Creativity	0.07086		
Awareness	0.70125		
Choices	0.67399		
Freedom to Act	0.73090		
Involve. in Change	0.60274		
Vectorial Time	0.20969		
Oceanic Time	0.27319		
Humanistic Time	0.32005		

Eigenvalues and Canonical Correlations

Eigenvalue	Canonical Correlation	Number of Eigenvalues	Bartlett's Test for Remaining Eigenvalues		
			χ^2	*df*	*p*
			74.12	45	0.0040
0.09952	0.31546	1	37.79	28	0.1023
0.05976	0.24445	2	16.44	13	0.2260
0.04635	0.21529				

Table 19 continues

Canonical Variable Loadings

Set/Variable	Canonical Variable 1	2	3
Set 1			
Charisma	-0.023	-0.497	-0.331
Inspiration	0.309	-0.089	-0.343
Intellectual Stim.	0.513	-0.323	-0.124
Indiv. Consideration	0.047	-0.137	-0.616
Contingent Reward	0.275	-0.169	-0.223
Management-by-Exception	-0.446	0.206	0.117
Laissez-Faire	-0.219	0.094	0.635
Creativity	0.123	0.212	-0.172
Awareness	0.173	-0.291	-0.116
Choices	-0.059	-0.099	-0.175
Freedom to Act Intent.	0.055	-0.299	-0.244
Involvement in Change	0.041	-0.518	-0.229
Vectorial Time	-0.019	-0.185	0.066
Oceanic Time	0.240	0.351	-0.065
Humanistic Time	0.221	-0.140	-0.265
Set 2			
School Type	0.083	0.623	0.777
Highest Degree	0.761	-0.550	0.344
Years as Educator	-0.364	-0.670	0.647

Table 19 continues

Squared Multiple Correlations of Each Variable with All Variables in the Other Set

Set/Variable	R^2	Adjusted R^2	F	df	p
Set 1					
Charisma	0.019882	0.011552	2.39	3,353	0.0688
Inspiration	0.015454	0.007086	1.85	3,353	0.1383
Intellect. Stim.	0.033166	0.024949	4.04	3,353	0.0077
Indiv. Consider.	0.018942	0.010604	2.27	3,353	0.0799
Cont. Reward	0.011569	0.003168	1.38	3,353	0.2495
Manage-by-Excp.	0.022940	0.014636	2.76	3,353	0.0420
Laissez-Faire	0.023993	0.015698	2.89	3,353	0.0354
Creativity	0.005557	-0.002894	0.66	3,353	0.5787
Awareness	0.008647	0.000222	1.03	3,353	0.3809
Choices	0.002352	-0.006127	0.28	3,353	0.8417
Freedom to Act	0.008406	-0.000021	1.00	3,353	0.3941
Involve. Change	0.018611	0.010270	2.23	3,353	0.0843
Vectorial Time	0.002280	-0.006199	0.27	3,353	0.8478
Oceanic Time	0.013305	0.004920	1.59	3,353	0.1923
Humanistic Time	0.009291	0.000871	1.10	3,353	0.3477
Set 2					
School Type	0.051930	0.010226	1.25	15,341	0.2932
Highest Degree	0.081219	0.040804	2.01	15,341	0.1123
Years. as Educ.	0.059401	0.018026	1.44	15,341	0.2322

Table 20

Summary of Stepwise Regression of Leadership Factors on Selected Demographic Variables

Step	Predictor	R	R^2	F (R^2)	R^2 Change	F (R^2 Change)	β	r
Dependent variable: Charisma								
1	School type	.132	.017	6.27 *	.0173	6.27 *	-.134	-.13
2	Years Educator	.139	.019	3.50 *	.0021	0.74	.038	.04
3	Highest degree	.141	.02[illegible]	2.39	.0005	0.17	.023	.04
Dependent variable: Inspiration								
1	Years Educator	.069	.005	1.68	.0047	1.68	-.094	-.07
2	Highest degree	.111	.012	2.20	.0075	2.70	.090	.06
3	School type	.124	.016	1.85	.0032	1.15	-.057	-.06
Dependent variable: Intellectual Stimulation								
1	Highest degree	.158	.025	9.02 **	.0248	9.02 **	.181	.16
2	Years Educator	.175	.031	5.60 **	.0059	2.15	-.077	-.02
3	School type	.182	.033	4.04 *	.0025	0.91	-.050	-.06
Dependent variable: Individualized Consideration								
1	School type	.123	.015	5.43 *	.0151	5.43 *	-.119	-.12
2	Years Educator	.138	.019	3.42 *	.0039	1.39	-.063	-.07
3	Highest degree	.138	.019	2.27	.0000	0.00	.002	-.02

Table 20 Continues

Step	Predictor	R	R^2	F (R^2)	R^2 Change	F (R^2 Change)	β	r
Dependent variable: Contingent Reward								
1	Highest degree	.072	.005	1.87	.0052	1.87	.091	.07
2	Years Educator	.095	.009	1.60	.0037	1.32	-.061	-.03
3	School type	.108	.012	1.38	.0026	0.94	-.051	-.06
Dependent variable: Management-by-Exception								
1	Highest degree	.126	.016	5.73 *	.0159	5.73 *	-.150	-.13
2	Years Educator	.148	.022	3.95 *	.0060	2.16	.079	.03
3	School type	.152	.023	2.76 *	.0011	0.39	.033	.04
Dependent variable: Laissez-Faire								
1	School type	.115	.013	4.75 *	.0132	4.75 *	.108	.11
2	Years Educator	.147	.022	3.92 *	.0085	3.07	.108	.10
3	Highest degree	.155	.024	2.89 *	.0023	0.84	-.051	-.02

* $p < .05$. ** $p < .005$.

Table 21

Summary of Stepwise Regression of Creativity, Power, and Time Experience on Selected Demographic Variables

Step	Predictor	R	R^2	F (R^2)	R^2 Change	F (R^2 Change)	β	r
Dependent variable: Creativity								
1	Years Educator	.073	.005	1.89	.0053	1.89	-.077	-.07
2	Highest degree	.074	.005	0.97	.0001	0.05	.013	-.01
3	School type	.075	.006	0.66	.0001	0.04	.011	.01
Dependent variable: Awareness								
1	Highest degree	.072	.005	1.85	.0052	1.85	.074	.07
2	School type	.093	.009	1.53	.0034	1.22	-.058	-.06
3	Years Educator	.093	.009	1.03	.0001	0.02	-.008	.01
Dependent variable: Choices								
1	School type	.046	.002	0.75	.0021	0.75	-.046	-.05
2	Highest degree	.048	.002	0.41	.0002	0.07	-.016	-.01
3	Years Educator	.049	.002	0.28	.0000	0.01	.006	.00
Dependent variable: Freedom to Act Intentionally								
1	School type	.085	.007	2.58	.0072	2.58	-.085	-.08
2	Highest degree	.092	.008	1.50	.0012	0.42	.034	.04
3	Years Educator	.092	.008	1.00	.0000	0.00	.003	.01
Dependent variable: Involvement								
1	School type	.116	.014	4.86 *	.0135	4.86 *	-.118	-.12
2	Highest degree	.131	.017	3.10 *	.0037	1.34	.049	.06
3	Years Educator	.136	.019	2.23	.0014	0.50	.039	.05

Table 21 continues

Step	Predictor	R	R^2	F (R^2)	R^2 Change	F (R^2 Change)	β	r
Dependent variable: Vectorial Time								
1	Years Educator	.042	.002	0.62	.0017	0.62	.039	.04
2	School type	.046	.002	0.38	.0004	0.14	-.020	-.02
3	Highest degree	.048	.002	0.27	.0001	0.05	.013	.03
Dependent variable: Oceanic Time								
1	Years Educator	.094	.009	3.17	.0089	3.17	-.110	-.09
2	School type	.109	.012	2.11	.0029	1.06	.056	.05
3	Highest degree	.115	.013	1.59	.0015	0.54	.041	.01
Dependent variable: Humanistic Time								
1	School type	.060	.004	1.28	.0036	1.28	-.056	-.06
2	Highest degree	.079	.006	1.11	.0027	0.95	.070	.05
3	Years Educator	.096	.009	1.10	.0030	1.08	-.058	-.04

* $p < .05$.

APPENDIX P

Correspondance

1. Dr. Bernard M. Bass, permission to use the MLQ.
2. Theresa Munoz, permission to use Barron Welsh Art Scale.
3. Dr. Elizabeth Ann Manhart Barrett, permission to use PKPCT.
4. Valarie Millholland, permission to use TMT.

CLS

CENTER FOR
LEADERSHIP STUDIES

March 25, 1993

Mark Kilker, RN, MSN
RR 5, Box 5460
Saylorsburg, PA 18353

Dear Mark:

This is in reply to your request to use the MLQ in your study.

Enclosed please find a copy of an experimental form 5X for self and raters and the scoring key. They should be reproduced only for your own research use.

You should use the instruments in their entirety. If absolutely necessary to reduce, please eliminate entire scales rather than some items from some scales.

We will appreciate also receiving a copy of the results of your research effort. In addition, please provide us with the raw data on the MLQ on a 3 1/2" disk, so that we would be able to add it to our normative data base.

Cordially,

Bernard M. Bass /sp

Bernard M. Bass

BMB/sp
(kilker.for)

Enclosure: Form 5X and key

School of Management, State University of New York at Binghamton, P.O. Box 6000, Binghamton, NY 13902-6000
Telephone (607) 777-3007, -4028; FAX (607) 777-4188; BITNET BG1584@BINGVMB

MIND GARDEN
sharing the garden of the mind

June 10, 1993

Mark Kilker
RR5
Box 5460
Saylorsburg, PA 18353

Dear Mark,

We are happy to offer you permission to reproduce the Barron Welsh Art Scale© for the purpose of research for a period of one year starting June 10, 1993 and ending May 31, 1994 for the fee of $90.00. An invoice is enclosed. Please feel free to contact me if you have any questions. You may produce as many copies as you need for your personal research during the years time. Copies of the Barron Welsh Art Scale© may not be sold to any other party. We have attached a Copyright -Permissions statement which you should keep with the Barron Welsh Art Scale. Good luck with your study! Though you are under no obligation to do so we would greatly appreciate being informed of the results of your study when it has been completed. Please contact us if you have any questions.

Sincerely,

Theresa Muñoz

MIND GARDEN
A service of Consulting Psychologists Press
(415) 691-9194

Elizabeth Ann Manhart Barrett, R.N., Ph.D., FAAN
415 East 85th Street, 9E
New York, NY 10028
Tel. (212) 861-8228

March 2, 1993

Dear Mark,

This letter is to grant you permission to use the "Power as Knowing Participation in Change Tool" in either Version I or Version II. There is no charge for one time use of this instrument for your dissertation research. However, in exchange for use of the tool, I do request that you send me a copy of your completed dissertation.

Sincerely,

Elizabeth Ann Manhart Barrett

Elizabeth Ann Manhart Barrett, RN, PhD, FAAN
Associate Professor

February 23, 1993

Mark Kilker, RN, MSN
RR 5, Box 5460
Saylorsburg, PA 18353

Ms. Valarie Millholland
Duke University Press
Box 90660
Durham, North Carolina 27708-0660

Dear Ms. Millholland,

I am writing follow-up on our recent telephone conversation and to request written permission to use the Time Metaphor Test in my doctoral dissertation. I am a doctoral candidate at Teachers College, Columbia University and plan to use the test in a study related to leadership styles of nurse educators.

The test was developed by Knapp and Garbut in 1958. The complete reference is as follows:

Knapp, R., Garbut, J. (1958), Time Imagery and the Achievement Motive, Journal of Personality, 26: 426-34.

Thank you very much for your assistance. If you have any questions I can be reached at 717-424-3568 (W) or 717-992-6094 (H).

Cordially,

Mark Kilker, RN, MSN

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