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Measuring Transformational Leadership in Athletic Training: A Comparative Analysis

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MEASURING TRANSFORMATIONAL LEADERSHIP
IN ATHLETIC TRAINING:
A COMPARATIVE ANALYSIS

DISSERTATION

A dissertation submitted in partial fulfillment of the
requirements for the degree of Doctor of Education in the
College of Education
at the University of Kentucky

By

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2013

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ABSTRACT OF DISSERTATION

MEASURING TRANSFORMATIONAL LEADERSHIP
IN ATHLETIC TRAINING:
A COMPARATIVE ANALYSIS

The purpose of this study was to measure the construct of transformational leadership among athletic training academicians and clinicians. Additionally, this study sought to determine whether perspectives regarding transformational leadership were the same or different based on full-time vocational roles. Finally, this study introduced a methodology for survey data analysis relatively unknown in athletic training research circles. Participants included athletic training education program directors as well as individuals in leadership roles at the state, district, and national level.

KEYWORDS: transformational, leadership, athletic training, Rasch, measurement

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Student's Signature

__April 9, 2013_____
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IN ATHLETIC TRAINING:
A COMPARATIVE ANALYSIS

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To Charmin

"There are things you can get from the silent devoted companionship of a dog
that you can get from no other source."

-- Doris Day

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CHAPTER 1 INTRODUCTION

The desire to define, understand, and explain the nature of leadership has interested scholars, practitioners, and policy makers for most of the 20th century. “The earliest literature on leadership was concerned almost entirely with theoretical issues” (Stogdill, 1974, p. 5), and offered little pragmatic value. It focused primarily on identifying different styles of leadership and applying them to managerial functions that increased organizational efficiency and productivity. Over time, social scientists attempted to identify what abilities, traits, behaviors, sources of power, or situational elements determine leadership influence, patterns, and effectiveness (Rost, 1991; Stogdill, 1974; Yukl, 2002).

Contrary to popular beliefs, the term *leadership* is a recent addition to the English language. It initially appeared during the early part of the nineteenth century as related to British political influence (Bass, 1990). Subsequently, scholars offered as many definitions of leadership as there were scholars defining it (Rost, 1991; Stogdill, 1974; Yukl, 2002). In addition, leadership theory is viewed as a broad, sweeping framework that examines diverse variables that may influence how leaders behave and their effectiveness in leading others (DuBrin, 2004). Stogdill (1974) suggests that because leadership is such an abstract concept, some scholars abandoned earlier and more comprehensive theories for ones that quantify it and reduce it to lists of behaviors or traits.

Although the terms *lead* and *leader* have a much longer history in literature, first introduced in the 1300s, the terms usually referred only to authority figures and thus focused on a single individual and his personal qualities and skills. The introduction of

the term leadership and its evolution focuses on a more complex concept that reaches beyond the single leader. Initially, leadership referred to what one person does with a group of people; more recent perspectives describe it as a process that happens among a group of people (Bundel, 1930; Rost, 1991). The evolution of the term is illustrated by several definitions, published in 1995 by the *Journal of Leadership Studies* as part of a series of articles discussing the changing of leadership over the past 60 years. For example, “Leadership is the art of inducing others to do what one wants them to do” (Bundel, 1930, p. 14), and “Leadership is an influence relationship among leaders and followers who intend real changes that reflect their mutual purposes” (Rost, 1991, p. 102). These examples also show changes in scholarly research on leadership over time, from defining leadership as a behavior to defining it as a relationship.

Leadership and the Certified Athletic Trainer

The 2010 *Role Delineation Study/Practice Analysis for the Entry-Level Athletic Trainer* conducted by the Board of Certification (BOC) identifies leadership as one of the roles of the certified athletic trainer. According to the study, athletic trainers (ATs) are responsible for providing efficient and effective health care and educational services and managing human resources.

The athletic training profession. Athletic training was officially recognized by the American Medical Association as a health profession in 1990 (NATA, 2011).

Athletic training is practiced by athletic trainers, health care professionals who collaborate with physicians to optimize activity and participation of patients and clients. Athletic training encompasses the prevention, diagnosis, and intervention of emergency, acute, and chronic medical conditions involving physical impairment, functional

limitations, and disabilities. ATs practice in a variety of settings including secondary schools, colleges and universities, professional sports organizations, hospitals, sports medicine clinics, and corporate and industrial work environments. To practice as an AT, one must be certified by the BOC, the national professional credentialing agency for the athletic training profession. In addition, many states also require the AT to obtain some form of licensure to practice (“State Regulatory News,” 2013).

Students who want to become certified athletic trainers must earn an entry-level degree, either at the undergraduate or graduate level, from an accredited athletic training curriculum and successfully complete the national certification examination. Accredited programs include formal instruction in areas such as injury/illness prevention, first aid and emergency care, assessment of injury/illness, human anatomy and physiology, therapeutic modalities, and nutrition. Classroom learning is enhanced through clinical education experiences. Currently, there are 367 Commission on Accreditation of Athletic Training Education (CAATE, 2012) accredited undergraduate athletic training education programs in the United States; 25 CAATE-accredited programs award entry-level master degrees. As academic and health care environments rapidly evolve, leadership in athletic training continues to be an important issue facing the profession.

Athletic trainers as leaders in health care. Aiken, Clarke, and Sloane (2000) and Norrish and Rundall (2001) concur that the call for leadership in health care has been a result of initiatives that are advocating for changing the landscape of health care in America. Taccetta-Chapnick (1996) describes the effects of restructuring health care systems and the role of transformational leaders in the change process. She asserts that change within allied health is accelerating, and is often characterized as being a

competitive environment, with circumstances that result from consumers searching for health care organizations that provide the highest quality of care at the lowest possible cost. Health care state organizations and leadership teams within them struggle to anticipate the nature and direction of change and advocate for their rights to continue to serve the American public in a way that will maximize outcomes while minimizing cost. Due to the nature of the profession, athletic training organizations are no exception. Taccetta-Chapnick believes that health care leaders must utilize transformational leadership skills that view the change as positive and cope with conflict that is an inherent part of the change process.

Statement of the Problem and Study Purpose

Currently, it is possible for athletic training students to matriculate through an entire educational curriculum and become certified, entry-level professionals without ever completing coursework or formal training in the area of leadership. Although Kutz and Scialli (2008) identified the need for leadership content within athletic training education, until such time as leadership competencies within the field are enforced, academicians and practitioners have autonomy to determine what skills and behaviors are provided to students. Without an abundance knowledge of what leadership behaviors currently exist in the profession, however, athletic training educators and clinicians are not equipped, nor can they be expected, to address this concern.

Additionally, as the numbers of doctoral faculty in athletic training education increase and these individuals assume roles in higher levels of academic administration, it becomes important to have a greater understanding of their perceptions regarding their abilities to exhibit leadership characteristics.

Therefore, in order to provide practitioners with data and guidance to prepare future scholars as leaders, and to understand the leadership behaviors displayed by current professionals in academic settings, this study attempted to measure transformational leadership practices in athletic training between currently practicing academicians and clinicians identified as leaders within the field.

Hence, the purposes of the study were threefold: (a) to measure the construct of transformational leadership among the executive board members of the NATA, each of the ten districts as defined by the NATA, each state's athletic training organization, and the program directors of athletic training education programs, (b) to determine whether their perspectives regarding transformational leadership were the same or different, and (c) to introduce a methodology for survey data analysis, the Rasch Rating Scale Model (RRSM), a model relatively unknown in athletic training research circles.

Research Questions and Design

In order to effectively ascertain the nature of leadership among athletic trainers, the goal of this quantitative, exploratory study was to understand the characteristics of individuals within state, district, and national athletic training organizational boards as well as academics and clinicians in the field regarding their understanding of their ability to exhibit transformational leadership.

This study was guided by four primary research questions:

- 1) To what extent do members of the national, district, and state athletic training organizations display transformational leadership?
- 2) To what extent do athletic training educators display transformational leadership?
- 3) What differences, if any, exist between academicians and clinicians?

- 4) Do the results provided by the study support existing literature related to leadership in athletic training?

Based on the previous research questions, the following hypothesis emerged:

H₁: Athletic training leaders at the organizational and institutional levels use transformational leadership behaviors to accomplish program goals.

The importance of and need for leadership in allied health education has been documented (Bamberg & Layman, 2004; Bamberg, Layman, & Jones, 2000). Further, it has been asserted that athletic training education program directors (PDs) must possess leadership skills that effectively inspire and allow faculty members and students to perform at high levels (Zuest, 2003). It is also vital that the individuals making collective decisions for the athletic training profession and its members display the transformational leadership behaviors and practices that coincide with those in other allied health fields (Kutz & Scialli, 2008; Laurent & Bradney, 2007; Zuest, 2003). Therefore, athletic training program directors (academicians) were proposed as one group of focus for this study, and the executive board members of athletic training organizations at the national, district, and state levels (clinicians) were proposed as a second group of focus for this study.

Study participants included those individuals as identified by CAATE to be the directors of the entry-level programs at their respective institutions as well as those individuals as identified by the National Athletic Trainers' Association (NATA) who currently serve at the state, district or national level in the offices of president, vice president, secretary, treasurer, and others as provided (which may include titles such as governmental affairs representative, region representative, parliamentarian, etc.). This provided a total census sample of 755 potential respondents.

Originally, Bass (1985) developed an instrument, the Multifactor Leadership Questionnaire (MLQ), designed to measure transformational and transactional leadership behavior. This study utilized a modified version of Avolio and Bass's (1995) MLQ, purchased with permission from Mind Garden, Inc. (see Appendix D); only those items related specifically to transformational leadership were included, providing 20 items representing a transformational leadership construct. Subsequent demographic questions produced by the researcher represented an additional eight items, yielding a 28-item survey (see Appendix B). The instrument was administered to all participants online using Qualtrics computerized distribution software. A cover letter embedded in each e-mail accompanied the survey (see Appendix A) and briefly described the items included in the survey, indicated a length of time for completion, and included contact information for the researcher. The role of the researcher was to administer the survey instrument and collect, analyze, and interpret the results.

Contributions of Proposed Research

Laurent and Bradney (2007) note that "leadership needs to be more extensively studied in athletic training" and a variety of "instruments should be used to more completely define the leadership practices and abilities of athletic trainers" (p. 124). Prior research has also suggested an exploration of other leadership groups within athletic training, more specifically stating that "the leadership positions within the National Athletic Trainers' Association and other athletic training-related organizations should be reviewed" (Laurent and Bradney, 2007, p. 125). Kouzes and Posner (1995) and Brown and Posner (2001) suggest one way that leadership is learned is through observation of other leaders. Therefore, the leadership behavior of program directors becomes a factor

in the leadership development of students in athletic training education programs, and the leadership behavior of practitioners in professional organizations becomes a factor in the leadership development of young professionals.

This quantitative, exploratory study utilized Rasch measurement, specifically the Rasch Rating Scale Model (RRSM), to focus on measuring transformational leadership behaviors among athletic training academicians and clinicians. Findings from the study may enhance understanding of transformational leadership among individuals serving on athletic training organizational boards as well as among athletic training educators. This study may advance the knowledgebase with regard to transformational leadership in the field, allowing current practitioners to further enhance the development of future professionals.

Limitations

Conceivably, the greatest limitation to the study was with respect to methodology. Because the researcher intended to utilize a unique method of data analysis that is virtually unheard of in athletic training research and somewhat limited in educational research, the comparability with other studies was restricted. Of note, however, is the value of the study and its contribution to the deficient literature base regarding leadership in athletic training. Furthermore, despite an inability to compare methodologies, inferences regarding results and findings can still be made and compared to previous research.

Additionally, assumptions must be acknowledged with respect to the internet survey instrument utilized in this study. Although consent was implied via participation, it was assumed that all respondents participated voluntarily and answered truthfully

regarding their own, self-reported transformational leadership behaviors. The researcher also assumed that all respondents had a valid e-mail address and no accessibility or accountability issues arose during the survey completion process.

Delimitations

As it relates specifically to academe, only the program directors of accredited athletic training education programs (ATEPs) were asked to participate in the study. Although other athletic training faculty members may assist ATEP PDs, because not all ATEPs are required to employ multiple faculty members, they were not intentionally surveyed in this study. In all probability, however, additional faculty members were identified as participants if they also happened to serve in a leadership capacity at the national, district, or state level.

The survey population did not include input from other undergraduate or graduate athletic training education faculty members and students regarding perceived leadership skills of the program director. Furthermore, the survey population did not include input from other association members regarding perceived leadership skills of the board members.

Definition of Terms

Key terms and concepts relevant to this study are presented in Table 1.1.

Table 1.1

Definition of Terms

Term	Definition
Athletic Training Education Program Director (PD)	BOC certified AT with a minimum of five years of experience; responsible for the organization and administration of the education program; must be a full-time employee of the sponsoring institution and have faculty status, rights, responsibilities, and privileges consistent with other similar positions at the institution
Board of Certification (BOC)	Certifying agency for athletic trainers in the USA; establishes standards for the practice of athletic training (BOC, 2010)
Commission on Accreditation of Athletic Training Education (CAATE)	Accrediting agency for entry-level and advanced level athletic training educational programs (CAATE, 2012)
Item Response Theory (IRT)	“A relatively recent development in psychometric theory that overcomes deficiencies of the classical test theory with a family of models to assess model-data fit and evaluate educational and psychological tests” (Bond & Fox, 2007, p. 232)
National Athletic Trainers’ Association (NATA)	Operating body for certified athletic trainers and those who support athletic training (NATA, 2011)
Rasch Measurement	Converts dichotomous and rating scale observations into linear measures; links qualitative analysis to quantitative methods; often classified under IRT and specifies how persons, probes, prompts, raters, test items, tasks, etc. must interact statistically through probabilistic measurement models for linear models to be constructed from ordinal observations (Linacre, 2011)
Transformational Leadership	“Leadership is an influence relationship among leaders and followers who intend real changes that reflect their mutual purposes” (Rost, 1991, p. 102).

Summary

This chapter provided a brief overview of the issues pertaining to leadership in health care and athletic training, both from a clinician standpoint as well as a researcher perspective. Additionally, this chapter presented the purpose of the study, research questions, proposed contributions, limitations and delimitations, and definitions.

Scholars have identified transformational leadership as a style of leadership necessary for health care providers to possess (Taccetta-Chapnick, 1996; Johnson, 2005; Clegg, 2000). Consequently, as health care providers it is critical for athletic trainers to have an understanding of this type of leadership and to display leadership styles consistent with those in other allied health fields. Furthermore, because current athletic training educational competencies do not require formal leadership training in the preparation of future professionals, an advancement of leadership knowledge for didactic purposes is crucial to developing students as the profession continues to grow.

By examining transformational leadership among current leaders in the athletic training arena, the researcher sought to address these issues and contribute to the overall body of work regarding leadership in the profession.

CHAPTER 2 REVIEW OF THE LITERATURE

Fairholm (2004) argues that the questions, “who is a leader?” and “what is leadership?” are asked by two different sets of leadership theorists and researchers. He observes that “this approach suggests that leadership is best understood by studying specific individuals in specific circumstances” (p. 579). He also notes that the question, “who is a leader?” would “focus on qualities, behaviors, and situational responses” (p. 579) of the leader. Rost (1991) would categorize this set of behaviors as an industrial or transactional approach to the study of leadership. On the other hand, Northouse (2004) would categorize these leader characteristics as fitting within the trait approach that often studies history’s great leaders by focusing on innate personal qualities.

Fairholm’s (2004) second question “what is leadership?” suggests an approach to the study of leadership that tends to “reject the idea that leadership is a summation of the qualities, behaviors or situational responses” (p.579). Rather, he suggests that those in leadership positions may be larger than the sum of the leader’s traits and skills. Similarly, Rost (1991) and Northouse (2004) would categorize this approach as a post-industrial, transformational way to study leadership, as it emphasizes the importance of relational leadership. In that regard, transformational leadership emphasizes the importance of interpersonal relations as the basis for enacting leadership (Fairholm, 2004). This post-industrial, transformational leadership perspective not only shifts the focus of leadership but also broadens the notion of who may lead.

This chapter will focus on a discussion of the history of leadership in the pre-industrial age (prior to 1945), the industrial paradigm characterized as transactional leadership as well as the post-industrial, transactional leadership paradigm (Rost, 1991).

The researcher will expand upon Rost's model of the post-industrial paradigm of transformational leadership, by reviewing the influential works of Burns (1978) and Bass (1999). These authors and other scholars posit that leadership is a process rather than a position that is hierarchically anchored. The post-industrial, transformational leadership paradigm is significant in that it supported the emergence of several leadership perspectives including professional learning communities, shared decision making, and distributive leadership that are contributing to the debate on how schools should be organized, managed, and governed. Finally, the researcher will review transformational leadership within the field of education as well as examine pertinent studies in the allied health literature. The purpose of examining this body of literature is to identify gaps in the literature that may offer promising lines of scholarly inquiry in the allied health field of athletic training.

Early History of the Study of Leadership

Prior to 1945, most studies of leadership sought to identify the individual traits of effective leaders. Trait theories of leadership were regarded as the first attempts at systematically studying leadership. The great man theory of leadership was a popular 19th century idea designed to explain historical leadership by the impact of great men, or heroes: highly influential individuals who, due to personal charisma, intelligence, or wisdom, utilized their power in a way that had a decisive historical impact. The theory was popularized in the late 1800's by Scottish writer Thomas Carlyle. Herbert Spencer later formulated a counter-argument that great men are the products of their societies, and that their actions would be impossible without the social conditions built before their

lifetimes (Carneiro, 1981). His perspective has remained influential throughout the 20th century to the present.

The American scholar Frederick Adams Woods (1913) supported Carlyle. Woods investigated 386 rulers in Western Europe from the 12th century till the French revolution in the late 18th century and discussed their influence on the course of historical events. According to Borgatta, Bales, and Couch (1954), the great man theory represented one way of thinking about the optimum leadership structure of a group. In order to test the great man theory in terms of organizational groups, Borgatta, Bales and Couch (1954) studied 126 enlisted Air Force personnel, putting them in groups of three to observe how small groups work together. Every person participated in four group sessions with two new co-participants in each 24-minute session. The authors attempted to measure group goal facilitation, individual prominence, and group sociability. It was their contention that a great man would need to possess a portion of each of the independent qualities in order to satisfy major role demands and personality needs of group members. Their findings suggest that great men tend to be highly effective in groups in the sense that both major factors of group performance, productivity and satisfaction of group members, were increased. By combining the great man theory with a study of leadership of individuals in small groups, Borgatta, Bales, and Couch began to build on a new way of thinking about organizing and managing work popularized in the 20th century: transactional leadership.

Transactional Leadership

In stark contrast to the great man theory, Chester Barnard (1938) looked at leadership through an organizational lens, viewing organizations as systems of

cooperation of human activity and noting that they are typically short-lived.

Organizations standing the test of time were those displaying effectiveness as well as efficiency. For Barnard, leadership is a significant element in human organizations; Barnard believed that successful organizations were those that satisfied each individual's needs and motives while working toward an attainment of goals and membership collaboration. Barnard argued that managers should obtain authority by treating subordinates with respect and competence, thus bridging the divide between organizational emphasis and consideration for workers.

Further contributions to the study of leadership were made by Ralph Stodgill (1948) at Ohio State University. Working for the College of Administrative Science, Stodgill received a grant from the Office of Naval Research to study literature and research on leadership (Bass, 1990). Stodgill, however, sought to identify the observable behaviors of leaders rather than continuing the work of his predecessors that focused on identifying personality traits. This shift was accompanied by the belief that leadership behaviors may be learned. To accomplish this, Stodgill (1948) developed the Leader Behavior Description Questionnaire (LBDQ). The LBDQ was administered to individuals in the military, and later to manufacturing companies, college administrators, and student leaders. Stodgill's work contributed to a two-factor theory of leadership that included two elements, consideration and initiating structure, which described how leaders carried out their roles. Consideration, sometimes called people-oriented behavior, involved showing concern for subordinates, being supportive, recognizing subordinates' accomplishments, and providing for subordinates' welfare (Hollander, 1979). This factor was oriented towards interpersonal relationships, mutual trust, and friendship. On the

other hand, initiating structure, sometimes called task-oriented behavior, involved planning, organizing, and coordinating the work of subordinates (Hollander, 1979). This factor was oriented toward defining leader and group member roles, initiating action, organizing group activities, and defining how tasks are to be accomplished by the group. According to the findings of the Ohio State studies (Stodgill, 1948; Hollander, 1979), leaders exhibited two types of behaviors, people-oriented (consideration) and task-oriented (initiating structure), to facilitate goal accomplishment. Additionally, Stodgill found that these two dimensions are independent, meaning that consideration and initiating structure exist simultaneously and in different amounts.

The Michigan leadership studies took place at about the same time as those at Ohio State. Under the general direction of Rensis Likert, the focus of the Michigan studies was to determine the principles and methods of leadership that led to productivity and job satisfaction (Likert, 1961). The studies resulted in two general leadership behaviors or orientations: an employee orientation and a production orientation (Katz, Maccoby, & Morse, 1950). Leaders with an employee orientation showed genuine concern for interpersonal relations. Those with a production orientation focused on the task or technical aspects of the job. The importance of the Michigan studies was the influence on developing an employee oriented and general supervisory model that yielded positive results. In addition to being known for developing the Likert scale (Likert, 1932), a psychometric scale commonly involved in research using questionnaires, Likert eventually developed four systems of management based on the Michigan studies: (a) exploitative authoritative, (b) benevolent authoritative, (c) consultative, and (d) participative. He advocated System 4 (the participative-group

system) that placed considerable emphasis on participatory behaviors resulting in the most positive outcomes and required leaders to place greater emphasis on interpersonal relationships between themselves and their followers (Likert, 1981).

The managerial grid model was a behavioral leadership model developed by Robert R. Blake and Jane Mouton (1964). The work of Blake and Mouton utilized a behavioral approach to leadership effectiveness, combining "concern for production" with "concern for people" and presenting five alternative behavioral styles of leadership. According to the managerial grid model, an individual practicing "impoverished management" places no strong emphasis on production or people. By contrast, an individual placing a strong importance on concern for people and less importance on production was termed a "country-club" manager while a person placing a strong importance on concern for production but paying little attention to the concerns of subordinates was a "task" manager. Balancing both a concern for production and a concern for people equally made one a "middle-of-the-road" manager. Finally, an individual who was able to simultaneously exhibit a high concern for production and a high concern for people was practicing "team management." According to the research findings, the team management grid was the most desirable approach (Bowerman & Van Wart, 2011). Subsequently, the managerial grid laid the groundwork for a great deal of leadership preparation in corporate America and was developed as a major consulting tool (Bowerman & Van Wart, 2011; Marksberry, 2012).

The assumption of the leader behavior approach was that there were certain behaviors that would be universally effective for leaders and that these behaviors could be learned. Unfortunately, empirical research has not demonstrated consistent

relationships between task-oriented or person-oriented leader behaviors and leader effectiveness. Like trait research, early stages of leader behavior research did not consider situational influences that might moderate the relationship between leader behaviors and leader effectiveness. Situational leadership theory was developed by Paul Hersey and Ken Blanchard in 1969 (Bowerman & Van Wart, 2011). The fundamental underpinning of situational leadership theory is there is no single style of leadership. The most successful leaders will adapt their leadership style to the maturity of those they are attempting to lead or influence, making effective leadership heavily reliant upon the task at hand. According to Hersey and Blanchard (1977), effective leadership varies not only with the person or group that is being influenced, but also depending on the task, job, or function that needs to be accomplished. The situational leadership model rests on three factors: (a) the style of the leader, (b) the maturity of the followers, and (c) the ability of the leader to develop people and self-motivation. Hersey and Blanchard (1977) characterized leadership style in terms of the amount of task and relationship behavior. Furthermore, they posited that the style of the leader depended on the maturity of the follower, and that maturity was task specific. For example, workers may be confident in their ability to perform their usual job but exhibit a low maturity level when asked to perform a task requiring skills they do not possess (Bowerman & Van Wart, 2011). Hersey (1985) also asserts that good leaders develop motivation in their followers, allowing them to be independent rather than relying on others for direction and guidance.

Leadership theories developed since the middle of the 20th century have laid an important foundation for emerging, post-industrial models of leadership. Specifically, ideas were grounded in the notion that leadership emphasized the value of accomplishing

tasks while maintaining positive relations with workers. These factors are key elements in effective leader behavior theories. More significantly, they described the nature of relationship leadership in highly effective groups and limited participation to organizational change processes (Foster, 1989).

Although these theories of leadership advanced the field, Rost (1991) notes that they reflect the values and assumptions of the industrial model of organizing and managing work that dominated the 20th century. Rost identifies two major problems that are associated with this approach. First, leadership continues to be confused with the leader as person, overshadowing the relational process between leaders and followers. Secondly, leadership is often assimilated into classical notions of good management, where "good" means effective productivity rather than the moral sense of the word that denotes the well-being of the worker. Bass (1990) characterized the industrial model of leadership as transactional in nature. In that regard, transaction refers to exchange between the leader and the worker. The worker is promised a reward for good performance or sanctioned for poor performance. Bass asserts that in many instances, however, such transactional leadership is a prescription for mediocrity. This is particularly true if the leader relies heavily on passive management in which they intervene with the group only when procedures and standards for accomplishing tasks are not being met. This kind of manager may use disciplinary threats to bring a group's performance up to standards, a technique that has been found to be ineffective if not counterproductive (Bass, 1990).

It is evident that the industrial transactional leadership paradigm places emphasis on great men and great women who possess desired traits that effectively influence

followers to do what leaders wish for purposes of achieving organizational goals (Rost, 1991). In this regard, the focus remains on the leader as an individual and underscores the importance of managers for increasing worker performance. Thus excellent management is the ability of the leader to gain support among workers to accomplish the leader's vision, viewed as an agenda and organizational goals. Rost challenges the industrial paradigm of leadership as management and calls for a new way of thinking about the construct of leadership, the “new post-industrial school of leadership” (Rost, 1991, p. 182).

Transformational Leadership

During the past several decades, scholars discussing the basic nature of leadership have placed increased emphasis on interaction among those involved. Thus, leadership is viewed as not being the work of a single individual but rather a collaborative endeavor among group members. Therefore, the essence of leadership is not the leader, but the relationship among people (Rost, 1991). The idea of transformational leadership was first introduced by James McGregor Burns in 1978 and further developed by Bernard Bass in 1985. Transformational leadership can be summarized as that which inspires and motivates others and is influence acquired via the leader’s use of creativity, admiration, and respect (Burns, 1978). According to Bass (1999), transformational leaders are accepting of followers' mistakes; they include followers in problem solving exercises and accept new ideas.

Bass and Riggio (2012) note that transformational leadership is composed of dimensions, including: (a) idealized influence, (b) inspirational motivation, (c) intellectual stimulation, and (d) individualized consideration (p. 6). Idealized influence

describes transformational leaders behaving in ways that result in their being role models for their followers and is broken down into attributes and behaviors. Such leaders encourage their followers by demonstrating care, showing respect, and demanding equality. Inspirational motivation identifies transformational leaders who providing meaning and a vision to their followers' work by displaying enthusiasm and exuberance. Intellectual stimulation describes those transformational leaders who stimulate their followers' efforts to be innovative and creative, reframing problems so that they are more easily understood, and create new ways to challenge those around them. Individualized consideration takes into account those transformational leaders who pay special attention to each individual follower's needs for achievement and growth by acting as coach or mentor, creating new learning opportunities along with a supportive climate. Followers and colleagues are developed to successively higher levels of potential (Bass, 1999; Bass & Riggio).

Rost (1991) re-emphasizes the need to shift or transform from an industrial era management paradigm to the post-industrial school of leadership. However, he suggests that changes must occur in universities, centers for leadership, professional development programs, and among practitioners, before teaching of the new post-industrial paradigm of leadership can begin.

Educational Research in Transformational Leadership

The transformational leadership model has been used in the United States in research as well as in practice (Bass, 1985; Bass & Yammarino, 1991). For example, transformational leaders serve as role models, and in that capacity they are optimistic and help generate commitment as well as focus on the followers' needs for growth (Bass,

1999). Scholars concur that these leaders may heighten the interests of followers, generate awareness and acceptance among the followers for the mission of the group, as well as motivate them to transcend their self-interests for the good of the group (Burns, 1978).

Avolio and Bass (2004) developed an instrument, the Multifactor Leadership Questionnaire (MLQ) to measure transformational and transactional leadership behavior. The MLQ is composed of nine subscales. Five of the nine subscales measure transformational leadership characteristics (i.e. idealized attributes and behaviors, inspirational motivation, intellectual stimulation, and individualized consideration) and four of the nine subscales measure transactional leadership characteristics (i.e. contingent rewards, active management-by-exception, passive management-by-exception, and laissez-faire). Managers who behave like transformational leaders are more likely to be seen by their colleagues and employees as satisfying and effective leaders than are those who behave like transactional leaders. These observations are based on survey responses of managers, colleagues, supervisors, and employees from the MLQ (Bass, 1990).

Studies utilizing the MLQ have come from an extremely broad variety of organizations: chief executive officers and senior and middle level managers in business and industrial firms in the United States and abroad; research and development project leaders; varied armed forces field officers, senior officers, and junior surface fleet officers; educational administrators; and religious leaders (Bass, 1999; Tichy & Devanna, 1990; Yukl, 2002).

Lowe and Kroeck (1996) conducted the first meta-analysis of literature on transformational leadership using the MLQ to integrate diverse findings, compute an

average effect for different leadership scales, and probe for certain moderators of the leadership style-effectiveness relationship. The purpose of their study was (a) to examine the frequency of transformational leadership style use in private versus public organizations, (b) to analyze the relationship between effectiveness of transformational and transactional leadership behaviors in private versus public organizations, (c) to determine if transformational leadership is more prevalent at upper levels of management than at lower levels, and (d) to evaluate the relationship between transformational and transactional leadership effectiveness by the level of the leader within the organization.

The 39 studies included in the meta-analysis met all of the following criteria: (a) the MLQ was used to measure the subordinate's perception of leadership style, (b) leader effectiveness must have been reported in the study, (c) the sample size must have been reported, (d) a Pearson correlation coefficient or a correlation conversion test statistic between leadership style and effectiveness must have been reported, and (e) the reported leader rating must have been performed by a subordinate of the leader. The results of the meta-analysis revealed that transformational leadership behaviors were more commonly observed in public organizations than in private organizations. Perhaps the most relevant result of this meta-analysis is the identification of the level of the organization where transformational leadership perceived to be most effective. Overall findings of the meta-analysis indicated that the MLQ may be used to identify leadership style at any level of leadership (Lowe and Kroeck, 1996).

Bass (1990) asserts that transformational leaders have better relationships with their supervisors and make more of a contribution to the organization than do those who are transactional managers. In addition, research findings indicate that organizations

whose leaders are transactional tend to be less effective than those whose leaders are transformational. This may be heightened if their transactional leadership is passive management-by-exception, i.e. intervening only when standards are not being met.

Transformational leaders give “individual attention, inspire others to excel, and stimulate people to think in new ways” (Kouzes & Posner, 1995, p. 321). The Leadership Personality Inventory (LPI) measures the frequency of use of effective leadership behaviors. It was developed as a result of studying the best practices of leaders in a variety of industries. The higher the score on the LPI, the more frequently a person is said to be using effective leadership behaviors. According to Kouzes and Posner, transformational leadership occurs when a leader inspires followers to share a vision, empowers them to achieve it, and provides the resources necessary for developing their own potential. There are five “practices” associated with transformational leadership: “challenging the process, inspiring a shared vision, enabling others to act, modeling the way, and encouraging the heart” (p. 9). Challenging the process involves looking for opportunities to change, grow, and improve as well as taking risks and being willing to learn from mistakes. Visions are conceptualizations, but they become real as leaders express them in concrete terms. Leaders who understand the strengths of their employees and their potential for more responsibility feel confident in enabling others to take control and initiative. To model the way, leaders establish principles concerning the way people (constituents, peers, colleagues, and customers alike) should be treated and the way goals should be pursued. To keep hope and determination alive, leaders recognize contributions that individuals make and in the rewards of their efforts, so leaders celebrate accomplishments (Brown & Posner, 2001).

Transformational Leadership in Health Professions

The literature on leadership style is often measured through leader and follower perceptions of behaviors and characteristics. For example, Clegg (2000) identifies a correlation in health care amongst quality of care, staff morale and effective leadership. Clegg believes that proactive leadership can foster high quality and individualized health care. Several examples of research using transactional and transformational leadership frameworks are discussed to illustrate its relevance to a wide array of health fields and contexts.

Nursing. Johnson (2005) studied nurse manager leadership effectiveness by means of a self-assessment instrument and case study of seven managers in various health care facilities including a chiropractic center, two community health clinics, a health employment office, a rehab clinic, a mental health clinic and a private hospital. The managers were selected because of their reputation as being "good managers" and because of the viability of their health care organization. Managers in the study performed a self-assessment of their managerial skills using the Scale of Transformational Leadership, a 24-item management style survey developed by Janda (1999). The survey measured six elements of management: (a) attention, (b) meaning, (c) trust, (d) self, (e) risk, and (f) feelings. Additionally, a health care management intern was paired with each manager to observe the manager and support or refute the manager's self-assessment; each intern did in fact support the manager's self-assessment rating. Findings from this study revealed the order of importance of managerial skills from highest to lowest as: (a) management of trust, (b) management of attention, (c) management of self, (d) management of feeling, (e) management of meaning, and (f)

management of risk (Johnson, 2005). This study provided valuable information on the validity of assessing managerial skills for hiring nurse leaders and promoting nurses to the ranks of leadership based on an assessment of management skills rather than nursing skills.

Transformational leadership theory was used as the theoretical construct to investigate the relationship between leadership style of nurse executives and organizational commitment among nurses in acute care hospitals (Leach, 2005). Leach posits that nurse executive leadership affects the registered nurses' organizational commitment and involvement in the success of the organization. In addition, he contends that lack of commitment of registered nurses to the organization is demonstrated by low morale, high turnover, and a lack of experience. This study showed an inverse relationship between nurse executive's transformational and transactional leadership style and the nurse manager's organizational commitment, which ultimately impacts the care provided by registered nurses.

Similar to Leach (2005), McGuire & Kennedy (2006) studied the link between the nurse manager's use of transformational and transactional leadership behaviors and the development of organizational commitment of registered nurses, which may impact patient outcomes. McGuire & Kennedy recommend that nurse manager's performance standards and education be revised to focus more on transformational processes than on transactional processes to encourage organizational commitment within the profession. The transformational processes discussed by McGuire and Kennedy include: (a) establishing clear expectations, (b) creating a shared vision for the nursing unit, (c) inspiring and motivating subordinates to perform beyond basic expectations, (d) creating

a sense of team spirit across the nursing unit, (e) utilizing effective listening skills, (f) coaching, and (g) mentoring (p.181). These processes can bring a competitive advantage to recruitment and retention of a committed workforce and foster a healthy work environment for nurses.

Al-Mailam (2004) conducted a cross-sectional study of public and private hospitals in Kuwait to examine the impact of transformational and transactional leadership style of department heads and hospital directors on the following performance measures: (a) quality of care, (b) employee satisfaction, and (c) employee perception of leadership efficacy (pp. 279-281). Results of this study showed that employees who worked for transformational leaders were more likely to view their leader as more effective than employees who worked for transactional leaders. Findings indicated that the value and significance employees place on transformational leadership style was an indicator for how those employees viewed quality and leadership. This study also solidifies the need to recruit and develop leaders who have the ability to learn to become transformational.

Dunham-Taylor (2000) recognized the challenges of nurse leaders with the expectations to achieve higher performances in an environment that is increasingly competitive and hectic with day-to-day crisis management, meetings, competing priorities from internal and external customers, and changing programs and services. Within this environment, positive and negative influences on organizational performance reside in the leadership style of nurse leaders. Dunham-Taylor made the assertion that, as the organization becomes more participative, transformational leadership effectiveness increases. Also, as the size of the organization increases, the organizational climate

enhances transformational qualities, especially when the nurse leader possessed a graduate-level academic degree. Participative organizations encourage higher levels of staff involvement in decision-making and managing productivity and outcomes. Employees in participative organizations are more likely to feel comfortable interacting with people at high levels within an organization to share ideas and address issues. Fostering work cultures in health care where the environment is categorized as participative calls for transformational leadership.

An examination of selected studies on nursing management leadership styles suggest that health care managers who use transformational leadership style tend to promote positive outcomes for patients and nursing staff. This literature is important in that it reviews and heightens the importance of transformational leadership style and effective change management.

Occupational therapy. Heads of rehabilitation departments are recognized as key leaders and major decision makers within the health care setting (Atkinson, 1997; Corrigan et al., 2000). The importance of leadership skills for rehabilitation managers cannot be overstated, in that success of their rehabilitation department rises and falls on the degree to which they exhibit effective leadership skills (Atkinson, 1997).

The Multifactor Leadership Questionnaire (MLQ) is comprised of four subscales designed to measure transformational leadership characteristics: (a) idealized attributes and behaviors, (b) inspirational motivation, (c) individualized consideration, and (d) intellectual stimulation. Utilizing the MLQ Form 5X as the primary instrument, Snodgrass and colleagues (2008) investigated the association between occupational therapy practitioners' perceptions of rehabilitation managers' leadership styles and the

outcomes of leadership. The working sample included 73 occupational therapy practitioners. Major findings from the study indicated that overall, transformational and transactional leadership styles were associated with leadership outcomes.

Transformational leadership had a significant ($p < 0.01$) positive association with the leadership outcomes, whereas transactional leadership had a significant ($p < 0.01$) negative association with the leadership outcomes. The contingent reward leadership attribute (although belonging to the transactional leadership construct) was found to be positively associated with leadership outcomes, similar to the transformational leadership constructs. The results of this research suggest that transformational leadership styles have a positive association with leadership outcomes, whereas transactional leadership styles have a negative association, excluding the positive transactional contingent reward attribute. Corrigan et al. (2000) studied the effects of an eight-hour short course on leadership training for developing transformational leadership skills. The sample size included leaders of occupational rehabilitation teams. The authors utilized the MLQ before and after the course training and found significant improvements in MLQ factors related to individualized consideration (transformational) and active management by exception (transactional).

In a doctoral dissertation study utilizing the MLQ Form 5X-Short, Reiss (2000) examined the association between leadership styles and effectiveness by comparing the leadership styles of occupational therapy professional academic program directors, technical academic program directors, and clinical directors. Major findings from this study indicated that: (a) technical academic program directors and clinic administrators scored higher on transformational leadership behaviors and effectiveness than

professional academic program directors and (b) transformational leadership styles of occupational therapy education program directors and perceived outcomes of leadership were found to have a statistically significant association ($p < 0.01$).

Chairpersons of allied health education programs were the focus of a study by Firestone (2010), who investigated the leadership behaviors of those individuals based on their perceptions as well as the perceptions of faculty. Behaviors were measured utilizing the MLQ Form 5X-Short as the primary instrument with an additional form used to gather demographic and program information. Participants included 138 department chairs and 327 faculty members. Major findings supported the propensity for chairpersons to demonstrate leadership behaviors primarily associated with transformational leadership as well as the contingent reward factor associated with transactional leadership. Statistically positive correlations were found of all five transformational leadership factors while statistically negative correlations based on faculty perceptions were found with the management-by-exception and laissez-faire leadership factors associated with transactional leadership. Firestone suggested that further development of the transformational leadership behaviors of chairpersons should be considered a priority for the allied health professions. Prior to his study, Firestone (2010) made the assertion that although studies had been conducted on leadership behaviors in individual allied health disciplines, there had been “no research to date on leadership behaviors among chairpersons in allied health programs” (p.34).

Athletic training. Athletic trainers are allied health professionals who work with physically active individuals in a variety of settings and with a varied patient population. Currently, the requirements for becoming a certified athletic trainer (ATC) in most states

include obtaining a degree in athletic training from an education program accredited by the Commission on the Accreditation of Athletic Training Education (CAATE) and successful completion of the Board of Certification (BOC) examination. The degree required for certification is considered entry-level and may be conferred at the undergraduate or graduate level. Individuals may practice athletic training clinically, as mentioned above; they may also choose to go into research and academe, working as educators with young adults pursuing a career in the field, or some combination therein.

Regardless of the chosen career path, the athletic training literature has identified the need for leadership in the profession (Kutz, 2004; Rankin & Ingersoll, 2006; Ray, 2005). Effective leadership is important to the profession of athletic training given the role leaders can play in positively influencing job satisfaction and perception of the importance of a job (Laurent & Bradney, 2007). Furthermore, leadership ability is a characteristic that employers of athletic trainers desire their potential employees to have (Kahanov & Andrews, 2001).

Although small in number, attempts have been made by athletic training researchers to address the lack of literature concerning transformational leadership within the profession. A study conducted by Zuest (2003) focused on the transformational and transactional leadership of athletic training education program directors. Zuest utilized the MLQ to answer the following research questions: “how do program directors view the use of transactional and transformational leadership within their own programs” and “what are the relationships between nine separate measures of leadership behaviors among athletic training education program directors?” Zuest’s findings reflect Bass’ (1990) optimal profile indicating that ATEP program directors utilized transformational

leadership behavior more often than transactional or laissez-faire leadership and that inspirational motivation was the most common leadership behavior used with followers (i.e. students) who give extra effort. Zuest (2003) noted that the principal implication of his findings is that ATEP program directors should utilize three transformational leadership behaviors: (a) individualized consideration, (b) idealized influence, and (c) inspirational motivation, which may result in students giving extra effort.

The normative data provided by the LPI allowed for a comparison of athletic training leaders' behaviors (specifically those of head athletic trainers and program directors) with those of leaders in other fields (Laurent & Bradney, 2007). Laurent and Bradney (2007) found that athletic training leaders reported using modeling and enabling behaviors more than other leaders, inspiring and challenging behaviors less than other leaders, and encouraging behaviors to the same extent as other leaders. In addition, Laurent and Bradney (2007) assert that athletic training leaders likely were elevated to their positions because they practiced leadership behaviors or exhibited the potential to lead.

Summary

This chapter presented an historical overview of leadership from the pre-industrial era through the post-industrial age as well as a discussion of the foci of industrial and post-industrial paradigms as discussed by Rost (1991), Bass (1990), Stogdill (1974), and others. In addition, a review of selected studies that used transformational leadership within the fields of education and health care (including nursing, occupational therapy, and athletic training) illustrated the relevance of transformational leadership in contemporary organizational settings.

Furthermore, studies in the field of athletic training underscore the importance of transformational leadership as a component of advancement and promotion. As Kutz (2012) asserts, the demonstration of leadership by athletic training students during their clinical education experiences establishes the necessity of leadership behavior early in entry-level preparation. In this regard, the responsibility for leadership development is incumbent upon athletic training educators and practitioners. However, although there appears to be a growing amount of literature on transformational leadership in education and some allied health professions, there is a paucity of current literature about leadership and leadership outcomes within the athletic training profession. This suggests an opportunity to conduct a study that adds to the knowledge base and allows practitioners to better prepare future athletic training leaders.

CHAPTER 3 METHODS

The post-industrial age focuses on the construct of transformational leadership as an organizational process (Rost, 1991). It has been suggested that “leadership needs to be more extensively studied in athletic training” and that a variety of “instruments should be used to more completely define the leadership practices and abilities of athletic trainers” (Laurent & Bradney, 2007, p.124). Prior research has also recommended an exploration of other leadership groups within athletic training, more specifically stating that “the leadership positions within the National Athletic Trainers’ Association and other athletic training–related organizations should be reviewed” (Laurent & Bradney).

Purpose and Significance

In order to provide practitioners with the knowledge to prepare future scholars as leaders and allow the profession to continue to evolve, this study attempted to measure transformational leadership practices in athletic training between currently practicing academicians and clinicians identified as leaders within the field. Thus, the purpose was to: (a) measure the construct of transformational leadership among the executive board members of the NATA, each of the ten districts as defined by the NATA, each state’s athletic training organization, and the program directors of athletic training education programs, (b) to determine whether their perspectives regarding transformational leadership are the same or different, and (c) to introduce a methodology for survey data analysis, the Rasch Rating Scale Model (RRSM), which is relatively unknown in the athletic training research arena.

Research Questions

Four primary research questions formulated the goal of this study, which was to understand the characteristics of academics and clinicians in the field regarding transformational leadership. Specific research questions addressed the following:

- 1) To what extent do members of the national, district, and state athletic training organizations display transformational leadership?
- 2) To what extent do athletic training educators display transformational leadership?
- 3) What differences, if any, exist between academicians and clinicians?
- 4) Do the results provided by the study support existing literature related to leadership in athletic training?

Based on the previous research questions, the following hypothesis emerged:

H₁: Athletic training leaders at the organizational and institutional levels use transformational leadership behaviors to accomplish program goals.

Sample Frame

These research questions were answered via survey data obtained from the individuals who hold leadership positions in athletic training organizations that exist at the state, district, and national levels as well as in academe. For purposes of this study, the author included those individuals as identified by the NATA who currently serve at the state, district or national level in the offices of president, vice president, secretary, treasurer, and others as provided (which may include titles such as governmental affairs representative, region representative, parliamentarian, etc.) At the time of this writing, the author has yet to discover any original research aimed at studying this population. Furthermore, individuals as identified by CAATE who currently hold the position of program director of an entry-level athletic training education program were also surveyed. This provided a total census sample of 755 potential respondents.

The census sample chosen for this study was selected based on the premise that holding an office on the executive board of a state, district, or national association implies a certain level of leadership ability and/or aptitude, as does serving in the capacity of an educator in the field. It is the researcher's opinion that in all probability these individuals meet the assertion by Laurent and Bradney (2007) that athletic trainers are likely elevated to their positions because they practice leadership behaviors or exhibit the potential to lead. The assumption that peer-appointed individuals exhibit leadership abilities, in combination with the availability of such a large group of this type, provided for a good population of interest that warranted further investigation.

Instrumentation

As discussed in Chapter 2, previous research on transformational leadership has involved the use of the Multifactor Leadership Questionnaire. Structural validation of the instrument was performed by Muenjohn and Armstrong (2008). Overall findings of the meta-analysis by Lowe and Kroeck (1996) regarding the use of the MLQ indicated that the instrument may be used to identify leadership style at any level of leadership. A modified version of the MLQ served as the survey instrument for this study; only those items relating specifically to transformational leadership were measured. See Appendix C for permission letter regarding dissemination and use of the instrument by Mind Garden, Inc.

The MLQ is comprised of four subscales designed to measure transformational leadership characteristics: (a) idealized attributes and behaviors, (b) inspirational motivation, (c) individualized consideration, and (d) intellectual stimulation. Each subscale consists of four items, providing 20 overall items representing the

transformational leadership component. Participant responses were based on a 0-4 point Likert scale (Likert, 1932) format designed to measure the frequency and intensity of usage with respect to transformational leadership behaviors. Frequency is a measure of how often the behavior is used, and intensity is a measure of the degree or magnitude with which the behavior is used: 0=not at all (0% of the time); 1=once in a while (25% of the time); 2=sometimes (50% of the time); 3=fairly often (75% of the time); and 4=frequently (100% of the time). Subsequent demographic questions represented an additional eight items, yielding a total survey set of 28 items (see Appendix B).

Data Collection Procedures

The MLQ was administered to all participants online using Qualtrics computerized distribution software in May, 2012. A cover letter (see Appendix A) was embedded in an initial e-mail indicating the purpose of the survey, a statement of significance, a request for participation, a statement regarding how their responses would be kept confidential, instructions for completing the survey, and lastly, a statement thanking them for their participation (Dillman, Smyth, & Christian, 2009). A link to the survey was also provided to ensure anonymity of respondents.

A second reminder email was sent one week later; a third and final reminder email was sent three days subsequent to the second. The window for inclusion in the study was 12 days. Consent was implied by response to the survey (see Appendix A). Participants who had already completed the survey were removed from the re-sampling frame, thus ensuring only non-responders from the initial survey administration received a follow-up invitation (Dillman, Smyth, & Christian, 2009). A subsequent email

thanking respondents for their participation was sent at the close of the survey inclusion window.

Data Coding

Likert scales have a series of thresholds, or levels, at which the likelihood of being observed in a given response category is exceeded by the likelihood of being observed in the next higher category. The Rasch Rating Scale Model regards this data as ordered categories only, in which the value of each category is higher than that of the previous category but by an unspecified amount (Bond & Fox, 2007). In other words, the model does not presume the size of the step necessary to move from one threshold (or response) to the next.

As utilized in this study, the respondent was required to mark a response on a disuse-use continuum. Possible responses were coded in a Likert scale format from 0-4 as indicated previously, where the higher number indicates a higher degree of agreement with the statement being evaluated. Based on responses, each item yielded an item difficulty estimate. Items were coded Q1-Q28.

Data Analysis

The following section provides a description of the data analysis procedures performed in this study. Measurement methodology in athletic training is discussed, along with the specifics of the Rasch Rating Scale Model (RRSM).

Measurement methodology in athletic training. Techniques utilizing item response theory (IRT) methods of measurement were developed midway through the 20th century. To date, however, the concepts surrounding IRT have been underutilized in studies involving educational leadership: a Boolean search of the terms ‘item response

theory' and 'educational leadership' in the ProQuest Education Journals database resulted in only 67 hits in the past 17 years. Furthermore, IRT is virtually nonexistent in athletic training research literature, eliciting a mere 3 results within the same time frame and database. A need for more research using these informative approaches is critically evident.

Rasch modeling. The Rasch model, formulated by Georg Rasch (1960), is a measurement method for obtaining fundamental, linear measures (qualified by standard errors and quality control fit statistics) from observations of ordered category responses (Wright & Masters, 1982). The use of the Rasch measurement model is growing in the field of educational survey research as researchers begin to understand the benefits and advantages that come with using a methodology that can provide a true objective measure of one's attitudes, perceptions, beliefs, etc. In fact, Cavanaugh and Waugh (2011) describe the Rasch model as "one of the ways forward for quantitative learning environments research" (p.14). Essentially, the Rasch model provides researchers with a useful way to understand reasoning associated with why people and items behave in a particular way (Bond & Fox, 2007). Additionally, provided the data fit the model, Rasch analysis allows for a construction of a scale, much like a ruler, separating the distributions of the latent trait in the person being measured (Bond & Fox, 2007).

Rasch Rating Scale Model. Traditional methods of statistical data analysis make many erroneous assumptions (Bond & Fox, 2007; Royal, 2010). The Rasch Rating Scale Model (RRSM) allowed the researcher to not only utilize a state-of-the-art psychometric method for data analysis, but also provided a methodology that could serve as a model for related studies in the athletic training research arena.

The RRSM (Andrich, 1978) assumes every item on a survey has the same number of response categories for all questions. This model is appropriate for Likert scale data because it relates the amount of a person's latent trait (e.g., one's tendency to agree with a statement) to the probability of an item response on a single scale. In other words, individuals with greater amounts of a latent trait are more likely to agree with, or endorse, a statement or item than individuals possessing less of the latent trait. It is only when these two elements are placed on the same scale and compared that truly meaningful inferences about person and item interactions can be made.

According to the model, the probability of a person n responding in category x to item i , is given by:

$$P_{xni} = \frac{\exp \sum_{j=0}^x [\beta_n - (\delta_i + \tau_j)]}{\sum_{k=0}^m \exp \sum_{j=0}^k [\beta_n - (\delta_i + \tau_j)]} \quad x = 0, 1, \dots, m$$

where $\tau_0 = 0$ so that $\exp \sum_{j=0}^0 [\beta_n - (\delta_i + \tau_j)] = 1$ β_n is the person's position on the variable, δ_i is the scale value (difficulty to endorse) estimated for each item i and $\tau_1, \tau_2, \dots, \tau_m$ are the m response thresholds estimated for the $m + 1$ rating categories.

Differential item functioning. Differential item functioning (DIF) techniques determine how items function in various subgroups. Rasch measurement assumes that individuals responding to a survey with similar knowledge, abilities, or opinions will respond alike regardless of race, gender, etc. DIF allows researchers to examine data amongst subgroups to detect any differences in their responses to a given item (Bond & Fox, 2007). According to Zwick and Thayer (1996), DIF values can range from 0.0 to 3.0, with a value of 3.0 indicating perfect agreement between subgroups. Conversely, a value of 0.0 would indicate complete disagreement as it relates to the item of interest. In

this study, DIF techniques were used to detect possible differences among academics and clinicians.

Item maps. Item maps are used to display a visual relationship amongst item responses. These maps display the distributions of persons and items along a hierarchy and can be visually represented much like a ruler. Placement of items and persons on a common scale permits evaluation of scale function relative to the sample. Winsteps software (Linacre, 2012) was utilized to graph person position with item position. Simultaneous positioning of items and person responses illustrates where responses place each person with respect to those items. This graph is can be used to determine how item positions match person positions, identifying whether or not the items are appropriate for the persons regarding ease of agreeability. It is also used to detect gaps, suggesting where items might be added or amended, and validity of the measure can be assessed by reviewing the order of the items.

On the maps, each person and item is represented in descending order according to difficulty, meaning the hardest items to endorse fall at the top of the map and the easiest items to endorse fall at the bottom of the map. In this study, item maps were used to visually represent the relationship between academic and clinician responses, thus illustrating the construct of leadership among this particular sample of athletic training leaders.

Psychometric Validation of Construct Validity

Whenever survey research studies are conducted using a Rasch methodology, it is helpful to evaluate the quality of the instrument by evaluating its psychometric properties. This process is commonly referred to as *survey validation* in most research

arenas. The present study incorporated a survey validation component to investigate the extent to which the results were both valid and reproducible.

According to Royal and Elahi (2011), it is helpful to use Messick's (1995) framework for construct validity to evaluate the psychometric properties of any instrument when using a Rasch model. Specific criteria investigated included unidimensionality, internal consistency, rating scale quality, item measure quality, item hierarchy, and person measure quality.

Summary

This study utilized Rasch measurement, specifically the Rasch Rating Scale Model, to focus on measuring transformational leadership behaviors amongst athletic training academicians and clinicians identified as leaders within the field. It is the researcher's belief that findings from the study provide a greater platform with which to advance the knowledge of transformational leadership in athletic training to current practitioners and thus to future professionals. Furthermore, the author believes that the utilization of Rasch measurement as an effective and appropriate means to analyze data will generate discussion among athletic training researchers as to its future methodological use within the field.

This chapter outlined the purpose of the study along with research questions and methodology. Participants, procedures, instrumentation, and analysis techniques were also discussed. The following chapter will focus on data analysis and results.

CHAPTER 4 ANALYSIS AND RESULTS

As emerging leaders in health care, athletic trainers should recognize the need for utilizing transformational leadership skills in order to prepare future scholars as leaders and keep the profession thriving in an ever-changing health care environment. As supported by the literature presented in chapter 2 and the methodology discussed in chapter 3, this chapter presents results from the modified version of the MLQ Form 5X Short used in the present study to measure transformational leadership among athletic trainers. First, descriptive statistics are presented to provide insights about the demographic characteristics of the survey sample. Next, the psychometric properties of the instrument are evaluated and reported (survey validation), followed by a discussion of construct validity. Specifically, dimensionality, reliability, rating scale effectiveness, person measure quality, item measure quality, and item hierarchy are examined. Lastly, findings from the Rasch analysis are presented in relation to the research questions of the study:

- 1) To what extent do members of the national, district, and state athletic training organizations display transformational leadership?
- 2) To what extent do athletic training educators display transformational leadership?
- 3) What differences, if any, exist between academicians and clinicians?
- 4) Do the results provided by the study support existing literature related to leadership in athletic training?

Characteristics of Respondents

The study population ($N=755$) consisted of a census sample of all athletic training education program directors as well as those individuals identified as leaders by their respective state, district, or national executive boards. A total of 300 responses were

collected providing a response rate of 39.7%. This response rate is atypical and thus important to note; due to survey fatigue experienced by many in the athletic training profession, survey research in the field typically generates a response rate of approximately 20% (Turocy, 2002). The gender makeup of the participants was 59% male, and 41% female. The majority of the respondents (68%) have been practicing athletic trainers for 16 years or more and almost all (89%) hold at least a master's degree. Over half (51%) identified an academic position as their primary job role (i.e. professor, program director, clinical coordinator, department chairperson, or teacher), and 57% identified a college/university or secondary school as their current practice setting. Clinical positions (i.e. head athletic trainer, assistant athletic trainer, or clinical director) comprised 42% of the responses, with a clinical practice setting chosen by 16%.

With respect to leadership positions either at the state, district, or national level, 17% of participants currently hold the office of President, 6% hold the office of Vice President, and 15% hold an office as a regional/district/area representative. The majority of participants (78%) have served in their current leadership position for five years or less, and one-third (33%) of those individuals have also held their current job for less than five years. Each of the ten districts was represented with District 4 having the highest number of participants (21%) and Districts 6 and 7 each yielding 5% of the responses. See Table 4.1 for detailed information about the demographic characteristics of the survey sample.

Table 4.1

Descriptive Statistics of Survey Respondents

Variable	n	%
Gender		
Male	162	59
Female	112	41
Current practice setting		
College/University	157	57
Secondary School	49	18
Clinic (hospital, outpatient, physician, secondary school, other)	45	16
Fitness club/Rec Sports	4	2
Hospital	2	1
Corporate	2	1
Performing Arts	1	0
Individual Contractor	2	1
Other	13	5
Years as practicing athletic trainer		
0-5 years	10	4
6-10 years	21	8
11-15 years	57	21
16-20 years	71	26
21-25 years	51	19
>26 years	64	23
Education		
Bachelor's Degree	30	11
Master's Degree	154	56
Doctorate	90	33

Table 4.1 (Continued)

Descriptive Statistics of Survey Respondents

Variable	n	%
Current leadership position		
President	47	17
Past President	18	7
Vice President	16	6
Secretary	19	7
Treasurer	19	7
Sec/Treas	11	4
Parliamentarian	0	0
Regional/Area/District Representative	41	15
Gov't Affairs/Legislative Chair	14	5
Other	91	33
Years of service in current leadership position		
0-5 years	214	78
6-10 years	40	14
11-15 years	12	4
>16 years	10	4
Current primary job title		
Admin Coordinator/Director	3	1
Head/Asst/Assoc Athletic Trainer	80	29
Full/Assoc/Asst Professor	9	3
Full/Assoc/Asst Program Director	68	24
Full/Assoc/Asst Clinical Education Coordinator	10	4
Full/Assoc/Asst Department Chair	20	8
Director Sports Medicine/Athletic Training	13	5
Lecturer/Instructor/Teacher	15	6
Lecturer/Instructor/Program Director	13	5

Table 4.1 (Continued)

Descriptive Statistics of Survey Respondents

Variable	n	%
Years in primary job		
0-5 years	82	30
6-10 years	87	32
11-15 years	54	20
>16 years	53	19
Current District		
District 1	30	11
District 2	30	11
District 3	27	10
District 4	57	21
District 5	30	11
District 6	15	5
District 7	14	5
District 8	18	7
District 9	37	14
District 10	16	6

Psychometric Properties of the Instrument

An important step in conducting survey research is to evaluate the quality of the instrument as it pertains to the sample, and the extent to which the data and instrument interact to produce valid and reproducible results. In this section, the psychometric properties of the instrument are evaluated and reported (survey validation). Messick's (1995) framework was used to construct validity to evaluate the psychometric properties of any instrument when using a Rasch model. Construct validation is achieved when intentions are supported by data (Wright & Masters, 1982). Specific criteria investigated

included dimensionality, internal consistency (reliability), rating scale effectiveness, item and person measure quality, item hierarchy, and differential item functioning.

Dimensionality. The concept of unidimensionality is based on the idea that the most useful and objective measurement involves examination of only one attribute at a time (Bond & Fox, 2007). Linacre (2012) asserts that “the Rasch model analyzes the data as though they are unidimensional, and then the fit statistics report how well the data match the mathematically unidimensional framework that the Rasch analysis has constructed,” (p.1310). Based on the evidence provided by the summary statistics for the model as well as the fit statistics for each item, the data address the assumptions of the one-parameter Rasch model by forming a unidimensional construct.

However, to provide additional evidence a principal components analysis of standardized residual correlations was performed. A total of 34% of the primary Rasch dimension was explained. Variance explained by the items totaled 19.5%. Variance explained by the persons totaled 14.5%. The largest secondary dimension explained 7% of the variance and had an eigenvalue of 2.1. Eigenvalues of 2.0 or above indicate potential for additional dimensions. However, the 2.1 eigenvalue of the first contrast suggested at best, it had the strength of about 2 items (out of the 20 total). Considering this evidence, the Rasch dimension was both sufficient in magnitude and detection to be discernible as the primary dimension, thus meeting the requirement for unidimensionality.

Reliability. Internal consistency relates to reliability, or the reproducible behavior of persons and items in similar trials (Traub & Rowley, 2005). In reference to persons, the Rasch model allows investigators to evaluate the replicability of person

ordering if the same individuals were given two different sets of items designed to measure a similar construct (Bond & Fox, 2007). Similarly, item replicability is designed to determine if items would behave in the same way, or appear in the same place along the continuum, if they were administered to a similar group.

Reliability and separation measures estimate the extent to which scores are reproducible. Table 4.2 provides the "Real" and "Model" reliability and separation measures. *Real* can be thought of as "worst case estimates" and *model* as "best case estimates" with true reliability falling somewhere in-between (Royal & Elahi, 2011). Person reliability in the sample ranged from .81 to .84, indicating relatively high internal consistency. Item reliability estimates were stable at .98, indicating high item reliability. Separation measures provide a ratio for sample deviation, corrected for error, to the average estimation error (Linacre, 2011). Rasch models place items and persons on a single scale along a continuum, and when lower values of separation are present (less than 1.0), it suggests redundancy in items and less variability between persons in relation to the measured trait (Green, 1996). Separation estimates for persons in the sample ranged from 2.08 to 2.26, thus indicating sufficient spread. Items also indicated sufficient spread with separation measures from 7.09 to 7.32.

Table 4.2

Reliability and Separation Measures

	Real	Model	Real	Model
Category	reliability	reliability	separation	separation
Persons	.81	.84	2.08	2.26
Items	.98	.98	7.09	7.32

Subscale reliability. Table 4.2 provided the "Real" and "Model" reliability and separation measures for the instrument as a whole. Subscales exist within the survey instrument, which divide the instrument into four sections. Section one (items 1-8), measured idealized influence, which includes the attributes and behaviors associated with transformational leadership. Section two (items 9-12), measured the inspirational motivation concepts associated with transformational leadership. Section three (items 13-16), measured the intellectual stimulation component of transformational leadership. Finally, section four (items 17-20), measured the individualized consideration aspect of transformational leadership. Cronbach's coefficient alpha values report subscale reliability estimates from previous researchers to have been acceptable, yielding .92, .92, .83, and .79 for each of the four sections respectively (Avolio & Bass, 2004). Table 4.3 provides the "Real" and "Model" reliability and separation measures for each of these subscales from the present study.

Idealized influence, inspirational motivation, and intellectual stimulation consisted of low-moderate to moderate levels of internal consistency while individual consideration was a bit lower than desired. Additionally, separation statistics are adequate for idealized influence, inspirational motivation, and intellectual stimulation, but are low for individual consideration (.90). As indicated previously in this chapter, when lower values of separation are present (less than 1.0), it suggests redundancy in items and less variability between persons in relation to the measured trait (Green, 1996). Upon closer examination, it is the researcher's belief that similar wording among three of the four items in the subscale may be a contributing factor to redundancy, as well as the relative ease with which respondents endorsed all four of the items. Results from this

subscale may not be as stable because respondents could not adequately distinguish between items.

Table 4.3

Reliability and Separation Measures for Subscales

Subscale	Category	Real	Model	Real	Model
		reliability	reliability	separation	separation
Idealized Influence	Persons	.66	.71	1.39	1.55
	Items	.99	.99	9.64	9.79
Inspirational Motivation	Persons	.73	.78	1.65	1.91
	Items	.97	.97	5.87	5.97
Intellectual Stimulation	Persons	.66	.71	1.38	1.58
	Items	.93	.94	3.76	3.85
Individual Consideration	Persons	.45	.51	.90	1.02
	Items	.95	.96	4.48	4.69

Rating scale effectiveness. An investigation of rating scale effectiveness can be used to address certain aspects of validity, namely structural validity. When discussing rating scale effectiveness, one looks at how the rating scale functions in capturing the data and how well response options create an interpretable measure.

The quality of a rating scale can be determined by the extent to which response options were appropriate, the categories functioned as intended, and the consistency of interpretation of items by participants (Linacre, 2002). Table 4.4 displays the rating scale diagnostics produced. Counts and percents indicated the extent to which respondents utilized the five rating scale response options. Results indicated that respondents primarily utilized the options “sometimes,” “fairly often,” and “frequently” primarily,

indicating the ease of endorsability of each item on the instrument. The extent to which each of the response options fit the structure of the rating scale can be determined by looking at the infit and outfit mean-square values. Infit and outfit mean-square ranges that are reasonably productive for rating scale measurement should fall between 0.6-1.4 (Wright & Linacre, 1994). With the exception of the values for response option 1, “not at all,” the infit and outfit mean-square values for each of the response options were well within these ranges, indicating good fit to the structure of the rating scale. Due to the poor response rate associated with the “not at all” option (n=14), collapsing categories 1 and 2 may be considered for future administration of the survey. Structure calibrations and category measures (also known as step calibrations), should increase in ascending order (Linacre, 2002). Structure calibrations and category measures generally ascended from smallest to largest in the results, indicating respondents were able to appropriately and consistently distinguish the ordinal pattern of response options. The possible exception is between categories 2 and 3. However, only 1% of the sample selected category 2.

Table 4.4

Summary of Rating Scale Diagnostics

Rating category	<i>n</i>	%	Infit mean square	Outfit mean square	Structure calibration	Category measure
(1) Not at all	14	0	1.41	1.74	NONE	-2.99
(2) Once in awhile	81	1	1.05	1.17	-1.46	-1.59
(3) Sometimes	807	14	.97	.97	-1.47	-.35
(4) Fairly often	2563	45	.98	.95	.36	1.51
(5) Frequently	2285	40	.99	.99	2.56	3.74

Person measure quality. Fit (infit and outfit) statistics yield descriptions regarding item and person measure quality. Rasch models estimate item calibrations independently of the sample, and person measures independently of the items. Estimated parameters are then used to compute expected response patterns for each item. These fit statistics are useful as a measure of the model-to-data fit for validity and as a way to analyze individual responses. They are derived by comparing expected patterns and observed patterns of item responses by persons (Lusardi & Smith, 1997; Wright & Masters, 1982). Infit statistics are information-weighted fit statistics, which are more sensitive to unexpected behavior affecting responses to items near the person's ability level. Outfit statistics are outlier-sensitive fit statistics that are sensitive to aberrant behavior on items far from a person's ability level. The purpose of fit statistics is to aid in the measurement of quality control (Wright & Masters, 1982). Parts of the data that do not meet the Rasch model specifications are not automatically rejected, but are examined to identify in what way and why they contribute to or corrupt measurement before a decision is made to accept, reject, or modify. In this way, item fit statistics contribute fundamentally to the construction and calibration of an instrument.

Person measure quality was assessed by examining the stability of measures, size of standard errors, and fit statistics (see Table 4.5). Person measures were acceptable, with an average standard error of .39. Using Wright and Linacre's (1994) criteria for reasonable infit and outfit mean square values (0.6 to 1.4), fit statistics for person measures were evaluated. Ideal fit statistics have values of 1.0. When looking at the overall person calibration fit to the RRSB, the data accord almost perfectly. When considering the volume of individuals included in the sample frame that potentially misfit

the model's expectations, only 2.5% of persons (n=8) were identified as potentially misfitting and qualified as candidates for removal. However, because the potential noise introduced by these individuals did not sufficiently affect the quality of the measurement system and merit removal, no one was excluded from the sample frame as a result of grossly misfitting the model's expectations.

Table 4.5

Overall Data to Model Fit Statistics

			Infit	Outfit
	Measure	Model error	MNSQ	MNSQ
Persons				
M	2.20	.39	1.01	1.01
SD	.99	.09	.46	.47
Items				
M	.00	.10	1.00	1.00
SD	.74	.01	.21	.22

Item measure quality. Item functioning and the usefulness of a measure can be determined by examining item measures, error, and fit values. Overall item fit was evaluated first (see Table 4.5). The mean standard error for items was .10 and collectively, the items fit the RRSM perfectly with values of 1.00. Table 4.6 displays the item statistics for each of the 20 survey items. A difficulty measure is provided (D_i) for each item, along with a standard error estimate. Infit and outfit mean-square fit statistics were also included to demonstrate data to model fit, and support content validity. Item

difficulty calibrations ranged from -1.98 to 1.17 logits, indicating adequate discrimination for data analyzed using the RRSM. Standard error estimates for each item ranged between .08 and .14. As mentioned previously, infit and outfit mean-square ranges that are productive for rating scale measurement should fall between 0.6-1.4; however, values do not distort or degrade measurement until they exceed 2.0 or fall below .5 (Wright & Linacre, 1994). Only one item in the dataset stood out as potentially problematic. Item Q17, *I spend time teaching and coaching*, slightly misfit the model's expectations with an infit mean-square value of 1.63 and an outfit mean-square value of 1.66.

Table 4.6

Item Fit Statistics

Item	D_i	SE	Infit	Outfit
			MNSQ	MNSQ
Q 1	.67	.09	1.23	1.26
Q 2	-1.16	.12	.96	.85
Q 3	-.51	.10	.83	.84
Q 4	.42	.09	1.01	1.07
Q 5	1.17	.08	1.25	1.30
Q 6	.44	.09	1.06	1.04
Q 7	-1.98	.14	1.00	1.08
Q 8	.13	.10	1.18	1.14
Q 9	.04	.10	1.01	1.01
Q10	-.28	.10	.87	.83
Q11	.81	.09	.67	.68
Q12	.06	.10	.69	.72
Q13	.55	.09	1.00	.99
Q14	-.07	.10	.99	.96
Q15	.52	.09	.81	.83
Q16	.69	.09	.82	.83
Q17	.01	.10	1.63	1.66
Q18	-.76	.11	1.05	1.10
Q19	-.87	.11	1.02	.95
Q20	.11	.10	.90	.91

Item hierarchy. The item hierarchy refers to the idea that in psychometrics, constructs being measured can be visually represented along a continuum. The location of items along the hierarchy indicates relationships among the items.

The item map presented in Figure 4.1 illustrates the construct hierarchy for transformational leadership among athletic trainers. When individuals responded to items, they indicated their level of perceived use based on an ordinal rating scale. Using the RRSM, these raw ordinal data responses were converted to their natural logarithm, thereby producing interval level measures, or logits. Similar to a ruler, which uses inches to represent equidistant interval level units of measure, item maps use logits. A logit scale (descending vertically from 6 to -2) can be seen on the far left side of the item map.

Next, the map is displayed in two distinct halves, with persons appearing on the left and survey items appearing on the right. Each ascend and descend along the same logit scale. Person respondents are symbolized as # ($n=3$) or "." ($n=1$ to 2). The center of the map includes the symbols, M, S, and T, which indicate the mean, one standard deviation, and two standard deviation marks for distributions of people and items. The mean measure for all athletic trainers is about 2 logits, with a significant majority within two standard deviations of the mean. The item mean is 0 logits. This gap indicates the survey is not particularly well-targeted to the sample frame, as generally, items are a bit easy for survey respondents to endorse. All items fell within two standard deviations from the mean with the exception of item Q7. Individuals with the highest logit values (closest to the top of the map) were more likely to see themselves as displaying the given item characteristics than individuals with the lowest logit values (closest to the bottom of the map).

Items Q1-Q8 represent idealized influence. It is interesting to note that the easiest item to endorse as well as the most difficult item to endorse within the entire survey were both located within this subscale. The most difficult item for athletic trainers to agree

with, located at the top of the map, was item Q5; *I talk about my most important values and beliefs*. The least difficult item for athletic trainers to agree with, located at the bottom of the map, was item Q7; *I consider the moral and ethical consequences of decisions*.

Items Q9-Q12 represent inspirational motivation. Items spanned the entire scale, but were mostly within one standard deviation of the item mean. The most difficult item to agree with in this construct was item Q10; *I talk enthusiastically about what needs to be accomplished*, which fell just below the mean for items. This item was also the second most difficult item of the instrument.

Items Q13-Q16 represent intellectual stimulation. Three of the four items in this subscale fell above the mean for items, thus indicating they were among the most difficult items to agree with, but were still below the person mean of the sample. The easiest item to endorse in this subscale was item Q14; *I seek differing perspectives when solving problems*.

Items Q17-Q20 represent individual consideration. The most difficult item to endorse in this subscale was item Q20; *I help others develop their strengths*. However, all of these items fell within one standard deviation of the item mean, indicating that most were easy to endorse.

```

MEASURE    Persons - MAP - Responses
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 6         . +
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 5         +
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           .# |
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           .#### S|
 3         ##### +
           .# |
           ### |
           ##### |
           ##### M|
 2         .##### +
           ### |
           .##### |
           ##### |T
           .##### S| Q5
 1         .### +
           .### |S Q11
           # | Q1   Q13   Q15   Q16
           .# | Q4   Q6
           . T| Q20  Q8
 0         +M Q12  Q14   Q17   Q9
           . | Q10
           |
           | Q3
           |S Q18  Q19
-1         +
           | Q2
           |T
           |
           |
-2         + Q7
           <less>|<frequent>
EACH "#" IS 3. EACH "." IS 1 TO 2

```

Figure 4.1 Person and Item Hierarchy Map

Differential item functioning. Differential Item Functioning (DIF) assumes that individuals responding to the survey with similar knowledge, abilities, and/or opinions, will perform alike regardless of various demographic criteria. DIF allows data to be examined by subgroup to detect any differences in responses on a given variable. Using collapsed scales, responses are then compared. Items that give different success rates for two or more groups, at the same ability level, are said to display DIF (Holland & Wainer, 1993). When developing new surveys, items displaying DIF would normally be revised or discarded. In this study, DIF was used to detect any discernible differences among academicians vs. clinicians who hold leadership positions within a state, district, or national association. Item calibrations were produced for 76 clinician responses (separately) and 104 academic responses (separately). Joint standard errors were calculated and a t-test was performed to discern if the calibrations were statistically significantly different at a 95% confidence level. According to Linacre (2005), joint standard error is equal to the square root of the sum of the squared standard errors, as indicated below.

$$SE(\text{measure}_1 - \text{measure}_2) = \sqrt{SE(\text{measure}_1)^2 + SE(\text{origin}_1)^2 + SE(\text{measure}_2)^2 + SE(\text{origin}_2)^2}$$

DIF analysis confirmed there was little variance, and no statistical significance, between respondents for any item, however it is important to note that the number of respondents is somewhat lower than usual for a typical analysis. Usually, a Rasch-based DIF analysis needs at least 100 cases in each group (Kubinger, Rasch, & Yanagida, 2009). See Table 4.7 for complete DIF results.

Table 4.7

DIF Results

Item	Clinicians		Academicians		JSE	Significant at $p < .05$
	Di	Error	Di	Error		
Q1	0.27	0.19	1.01	0.14	0.236008	NO
Q2	-1.32	0.23	-1.2	0.2	0.304795	NO
Q3	-0.57	0.21	-0.49	0.17	0.270185	NO
Q4	0.47	0.18	0.57	0.15	0.234307	NO
Q5	1.2	0.17	1.26	0.13	0.214009	NO
Q6	0.34	0.19	0.7	0.15	0.242074	NO
Q7	-2.08	0.28	-2.33	0.27	0.388973	NO
Q8	0.2	0.19	0.06	0.16	0.248395	NO
Q9	0.34	0.19	-0.1	0.16	0.248395	NO
Q10	-0.17	0.2	-0.1	0.16	0.256125	NO
Q11	0.99	0.18	0.72	0.14	0.228035	NO
Q12	0.2	0.19	0.01	0.16	0.248395	NO
Q13	0.27	0.19	0.95	0.14	0.236008	NO
Q14	0.05	0.19	-0.21	0.17	0.254951	NO
Q15	0.41	0.18	0.64	0.15	0.234307	NO
Q16	0.86	0.18	0.85	0.14	0.228035	NO
Q17	0.16	0.19	-0.4	0.17	0.254951	NO
Q18	-0.92	0.22	-0.74	0.18	0.284253	NO
Q19	-0.88	0.21	-1.01	0.19	0.283196	NO
Q20	0.2	0.19	-0.18	0.16	0.248395	NO

Summary of the psychometric properties of the instrument. As mentioned previously, Royal and Elahi (2011) introduced and demonstrated an effective way of evaluating construct validity in the Rasch context by way of Messick's (1995) framework for construct validity. Messick's framework contains six components of construct validity: substantive, structural, content, generalizability, external, and consequential. The present study follows the format of Royal and Elahi as inferences about the various aspects of construct validity in the Rasch context are evaluated.

Construct validity is the examination and integration of any evidence which may influence the interpretation or meaning of a score (Messick, 1995). First, a principal components analysis of standardized residual correlations determined the Rasch dimension was both sufficient in magnitude and detection to be discernible as the primary dimension, thus meeting the requirement for unidimensionality. These findings provided support for the aspect of substantive validity. Structural validity was evidenced by respondents' full use of the rating scale, along with structure calibrations and category measures supporting that respondents were able to appropriately and consistently distinguish the ordinal pattern of the response options. Acceptable infit and outfit mean-square measures and small standard errors for items supported content validity.

With the exception of one item that slightly misfit the model's expectations, all other item measures conformed to Wright and Linacre's (1994) recommended range of 0.6-1.4, and standard error estimates were small and rather stable, ranging between .05 and .06. Although reliability estimates for persons (.81) and items (.84) could be a bit stronger, generalizability is still supported by these estimates.

With regard to the external aspect of validity, no evidence from the present analysis is presented. However, in numerous studies, transformational leaders were found to generate higher commitment in their followers (Avolio, 1999; Avolio & Yammarino, 2002; Bass, 1999). For instance, Koh, Terborg and Steers (2006) noted greater organizational commitment of school teachers and students if their principals were rated more transformational. Fuller, Patterson, Hester, and Stringer (1996) reported greater follower compliance if their leaders were more transformational than transactional. As Bass and Avolio (Avolio, 1999; Bass, 1999; Bass & Avolio, 1993) have demonstrated, greater follower effectiveness and satisfaction is produced more often when leaders practice transformational leadership rather than transactional leadership, highlighting the advancements in practicality and research in the years since Burns' (1978) foundational publication.

Systematic validity for academicians and clinicians was evaluated by way of differential item functioning (DIF). DIF results revealed neither subgroup responded to any of the 20 items in any statistically significantly different manner. This provides evidence of construct stability across these particular subpopulations and gives assurance that academicians and clinicians view the construct of transformation leadership in very similar ways.

Relating Rasch Results to the Research Questions

A modified version of the MLQ Form 5X Short included a total of 20 questions divided into four sections as outlined in chapter 3 and aligned to the theoretical framework discussed in chapter 2, which was used to investigate the research questions of this study. A thorough analysis of the psychometric properties of the survey

instrument was provided in the previous section. The results of this evaluation and an examination of construct validity provide for valid and reliable inferences. In this section, findings from the Rasch analysis are presented to address each of the research questions:

- 1) To what extent do members of the national, district, and state athletic training organizations display transformational leadership?
- 2) To what extent do athletic training educators display transformational leadership?
- 3) What differences, if any, exist between academicians and clinicians?
- 4) Do the results provided by the study support existing literature related to leadership in athletic training?

Research questions regarding the extent to which athletic training educators and organizational members display transformational leadership. The participants of this study perceived themselves to display transformational leadership to a great degree; they had little trouble responding to the items, as discussed previously and represented along the construct hierarchy (Figure 4.1). However, the 2-logit gap between the person mean and the item mean indicated the survey was not particularly well-targeted to the sample frame, as generally, items were somewhat easy for survey respondents to endorse. This point is further illustrated by the mean (M) and standard deviation (SD) raw scores (1-5 rating scale) for each subscale (Table 4.8), which indicate the extent to which the respondents display the transformational leadership characteristic of that subscale (Avolio & Bass, 1999).

Table 4.8

Mean Person Measures by Subscale

Subscale	M	SD
Q1-Q8 Idealized Influence	4.21	3.7
Q9-Q12 Inspirational Motivation	4.18	2.2
Q13-Q16 Intellectual Stimulation	4.08	2.1
Q17-Q20 Individual Consideration	4.35	2.2

Research question regarding differences between academicians and clinicians. Respondents who indicated that their primary job role required them to perform classroom instruction at least half of the day were classified as academicians (n =104). Those who indicated that their primary job role required them to perform clinical services at least half of the day were classified as clinicians (n = 76). A number of individuals failed to provide responses to these items, thus there were a number of missing responses. Based on the results of the DIF analysis among the 180 persons who provided a valid response for this variable, no significant differences were found regarding their perceived ability to exhibit transformational leadership.

Research question regarding support of study by existing literature. As indicated in chapter 2, leadership research in athletic training is sparse. Of the relevant studies involving transformational leadership in athletic training, the results presented here align most closely with those found by Zuest (2003), who utilized the MLQ to indicate that athletic training educators should primarily use the transformational leadership behaviors of idealized influence, individualized consideration, and inspirational motivation to successfully motivate their students.

Additionally, the findings presented here also align closely with those found by Firestone (2010), who utilized the MLQ to indicate that physical therapy faculty and chairpersons also perceived themselves as most often demonstrating behaviors associated with individualized consideration.

Summary

This chapter presented the results from the survey instrument used in this study to measure transformational leadership among athletic trainers nationwide. A total of 300 responses were collected providing a response rate of 39.7%. Descriptive statistics were presented to provide insights about the demographic characteristics of the survey sample. The psychometric properties of the instrument were evaluated (survey validation) and results were presented. Specifically, construct validity was evaluated by investigating the psychometric properties of dimensionality, reliability, rating scale effectiveness, person measure quality, item measure quality, item hierarchy, external validity, and differential item functioning. In the last section, findings from the Rasch analysis were presented in relation to the research questions of the study. The following chapter will present a discussion of major findings and conclusions, followed by implications and recommendations for future research.

CHAPTER 5 DISCUSSION

This final chapter briefly reviews the research problem, the need for and purpose of the study, and the specific questions in the study. Following a report of the study's limitations is a discussion providing an interpretation of the findings that examines the relationship of the current study to previous research. In addition, the researcher examines the implications of findings for practice as well as offers suggestions for additional research.

The introduction of the term leadership and its evolution focuses on a more complex concept that reaches beyond the single leader. Initially, leadership referred to what one person does with a group of people; more recent perspectives describe it as a process that happens among a group of people (Bundel, 1930; Rost, 1991). As mentioned in Chapter 1, the importance of and need for leadership in health education has been documented (Bamberg & Layman, 2004; Bamberg, Layman, & Jones, 2000). In fact, scholars persuasively argue that the athletic training performance domain of organization and administration indicates athletic trainers should have “knowledge of leadership” and “preparation for leadership roles” (Kutz & Scialli, 2008).

The necessity of leadership behavior early in entry-level preparation of the athletic trainer has been established (Kutz, 2012). Currently, however, it is possible for athletic training students to matriculate through an entire educational curriculum and become certified, entry-level professionals without ever completing coursework or formal training in the area of leadership. Although Kutz and Scialli (2008) identified the need for leadership content within athletic training education, and although the Board of Certification (2010) identifies leadership as one of the roles of the certified athletic

trainer, until such time as leadership competencies within the field are developed, academicians and practitioners have autonomy to determine what skills and behaviors are provided to students. This task becomes difficult, however, without an accurate knowledge of what leadership behaviors currently exist in the profession. As the numbers of doctoral faculty in athletic training education increase and these individuals assume roles in higher levels of academic administration, it becomes important to have a greater understanding of their perceptions regarding their abilities to exhibit leadership characteristics.

Moreover, higher education research indicates a positive correlation between transformational leadership behaviors and organizational effectiveness (Dudek-Shriber, 1997; Dunham-Taylor, 2000; Tucker, Bass, & Daniel, 1992). It stands to reason, then, that individuals identified as leaders within their organizations would perhaps be more effective if they exhibited transformational leadership behaviors, and that transformational leadership should be a topic of discussion in the athletic training student's didactic setting.

In consideration of these issues, this study attempted to measure transformational leadership practices in athletic training between currently practicing academicians and clinicians identified as leaders within the field, both to provide practitioners with the data and guidance to prepare future scholars as leaders, and to understand the leadership behaviors displayed by current professionals in academic settings.

Consequently, the purposes of the study were threefold: (a) to measure the construct of transformational leadership among the executive board members of the NATA, each of the ten districts as defined by the NATA, each state's athletic training

organization, and the program directors of athletic training education programs, (b) to determine whether their perspectives regarding transformational leadership were the same or different, and (c) to introduce a methodology for survey data analysis, the Rasch Rating Scale Model (RRSM), a model relatively unknown in athletic training research circles.

In order to ascertain the nature of leadership among athletic trainers, the goal of this quantitative, exploratory study was to understand the characteristics of individuals within state, district, and national athletic training organizational boards as well as academics and clinicians in the field regarding their understanding of their ability to exhibit transformational leadership. This study was guided by four primary research questions:

- 1) To what extent do members of the national, district, and state athletic training organizations display transformational leadership?
- 2) To what extent do athletic training educators display transformational leadership?
- 3) What differences, if any, exist between academicians and clinicians?
- 4) Do the results provided by the study support existing literature related to leadership in athletic training?

Limitations

As summarized in Chapter 1 of this manuscript, conceivably the greatest limitation to this study was with respect to methodology. Because the researcher intended to utilize a unique method of data analysis that is unique in athletic training research and somewhat limited in educational research, the comparability with other studies was restricted. Of note, however, is the value of the study and its contribution to the literature base regarding leadership in athletic training. Additionally, assumptions must be acknowledged with respect to the internet survey instrument utilized in this

study. Although consent was implied via participation, it was assumed that all respondents participated voluntarily and answered truthfully regarding their own, self-reported transformational leadership behaviors.

Delimitations

As it relates specifically to academe, only the program directors of accredited athletic training education programs (ATEPs) were asked to participate in the study. Although other athletic training faculty members may assist ATEP Program Directors, because not all ATEPs are required to employ multiple faculty members, they were not intentionally surveyed in this study. In all probability, however, additional faculty members were identified as participants if they also happened to serve in a leadership capacity at the national, district, or state level. Furthermore, the survey population did not include input from other undergraduate or graduate athletic training education faculty members and students regarding leadership skills of program directors, nor was input provided regarding leadership skills of board members. Other instruments intended to measure this have been developed in previous research and may be implemented at a later date.

Interpretation of Findings

Demographics and personal characteristics. A profile of the demographic and personal characteristics of the respondents was constructed, and their perceived ability to exhibit transformational leadership with specified subscale facets was measured using the Rasch Rating Scale Model (RRSM). The study population ($N=755$) consisted of a census sample of all athletic training education program directors as well as those individuals identified as leaders by their respective state, district, or national executive boards. A

total of 300 responses were collected providing a response rate of 39.7%. This response rate is atypical and thus important to note; due to survey fatigue experienced by many in the athletic training profession, survey research in the field typically generates a response rate of approximately 20% (Turocy, 2002). The gender makeup of the participants was 59% male and 41% female, which is consistent with previous survey research results in the field (Laurent & Bradney, 2007; Turocy, 2002). The majority of the respondents (68%) have been practicing athletic trainers for 16 years or more, which is consistent with reported results by Laurent and Bradney (2007).

In investigating leadership styles among nurses, Dunham-Taylor (2000) made the assertion that, as an organization becomes more participative, transformational leadership effectiveness increases. In this study, 156 of respondents (56%) who identified themselves as holding a specific leadership position at the state, district, or national level have obtained a master's degree. Although this study did not distinguish at which level of organization (state, district, or national) the respondents function in their role, this finding is in agreement with Dunham-Taylor's analysis that organizational climate enhances transformational qualities, especially when leaders possess a graduate-level academic degree.

Over half (51%) identified an academic position as their primary job role (i.e. professor, program director, clinical coordinator, department chairperson, or teacher), and 57% identified a college/university or secondary school as their current practice setting. Clinical positions (i.e. head athletic trainer, assistant athletic trainer, or clinical director) comprised 42% of the responses, with a clinical practice setting chosen by 16%. Laurent

and Bradney (2007) reported similar, although inverse, percentages with respect to academic versus clinical positions (50.4% clinical; 49.6% academic).

With respect to leadership positions either at the state, district, or national level, 17% of participants currently hold the office of President, 6% hold the office of Vice President, and 15% hold an office as a regional/district/area representative. The majority of participants (78%) have served in their current leadership position for five years or less, and one-third (33%) of those individuals have also held their current job for less than five years. Each of the ten districts was represented with District 4 having the highest number of participants (21%) and Districts 6 and 7 each yielding 5% of the responses. Representation by all ten districts promotes the generalizability of the results to athletic trainers nationwide.

Athletic training leaders in academe and organizational settings.

Transformational leadership can be summarized as that which inspires and motivates others and is influence acquired via the leader's use of creativity, admiration, and respect (Burns, 1978). In health care fields such as nursing and occupational therapy, studies involving transformational leadership have focused on chairpersons, managers, department heads, and clinicians alike (Al-Mailam, 2004; Leach, 2005; McGuire & Kennedy, 2006). The first two research questions were designed to determine the degree to which athletic training leaders in academe and in organizational settings display transformational leadership. By examining the rating scale structure and diagnostics to determine the validity and reliability of the instrument, evidence was provided indicating that, with the exception of one potentially misfitting item, survey items were written clearly and all respondents interpreted the items similarly. Item Q17, *I spend time*

teaching and coaching, slightly misfit the model's expectations with an infit mean-square value of 1.63 and an outfit mean-square value of 1.66.

Additionally, information provided in Table 4.8 regarding the means of each item subscale provides evidence that although items were easily endorsed by both academicians and clinicians, respondents exhibited the subscale characteristic of individual consideration more than any other characteristic of the transformational leadership construct, which includes treating others as individuals and serving as a mentor to help people develop their strengths. The perceptions of both groups were lowest for intellectual stimulation, indicating that athletic trainers did not perceive themselves as fostering an environment in which others could safely take risks. This may be due in part to the professional responsibilities and potential legal ramifications associated with the field.

Idealized influence. Items Q1-Q8 (see Appendix B) of the survey instrument represented the idealized influence component of transformational leadership. According to Bass (1999), idealized influence is broken down into attributes and behaviors and describes transformational leaders behaving in ways that result in a role model relationship. Both the easiest as well as the most difficult item of the instrument were located in this subscale.

I talk about my most important values and beliefs, (item Q5), was the most difficult item for respondents to agree with. Perhaps this is because, as previously stated, the majority of participants (78%) have served in their current leadership position for five years or less, and one-third (33%) of those individuals have also held their current job for less than five years. Although talking about values and beliefs may seem like something

a leader is, or should be, inclined to do, the lack of a significant number of years of experience may leave some athletic trainers hesitant to express such opinions.

Additionally, it is possible that those who hold academic roles and serve as clinical preceptors for students in athletic training education programs, while possessing the desire to be a mentor or role model, may be unwilling to fully express their values or beliefs for fear of placing undue influence on the students they oversee. Furthermore, a lack of knowledge regarding the values and beliefs of other cultures may leave some respondents unsure of how to integrate such concepts into a discussion with a student.

As practitioners become more culturally competent and academicians become more comfortable with infusing cultural competence in the classroom, the idea of discussing one's own values and beliefs may become easier for professionals to endorse. Bertrand Haynes (2008) supports this school of thought; he asserts that the characteristics of a transformational leader who strongly exhibits idealized influence provides for an organization to become culturally competent. Haynes also posits that once an individual has a clearer understanding of who he or she is and an acceptance of how he or she is perceived, competence, appreciation, and understanding of others will soon follow.

The least difficult item for athletic trainers to agree with was item Q7; *I consider the moral and ethical consequences of decisions*. Due to the requirements of all ATs to agree to abide by a Code of Ethics as established by the NATA, and the knowledge of the potential loss of licensure associated with an ethics violation, the idea that this item was the easiest to endorse seems entirely acceptable.

Inspirational motivation. Items Q9-Q12 (see Appendix B) of the survey instrument represented the component of inspirational motivation associated with the

transformational leadership construct. Transformational leaders who display inspirational motivation provide meaning and challenge to the work environment and those around them (Avolio & Bass, 1999; Bass, 1999; Bass & Riggio, 2012). As stated earlier, the most difficult item to agree with in this construct was item Q10; *I talk enthusiastically about what needs to be accomplished*, which was also the second most difficult item of the instrument. A potential reason for difficulty associated with this item may be the type of position reportedly held by the respondents. For example, only 23% of participants held the leadership position of President or Vice President for their respective associations. Other offices, which represented the majority of respondents, may not require an open discussion of necessary accomplishments to be met on the part of the officer; talking about the needs of the organization may not be a specific function of that particular individual, and thus cause the item to be difficult to endorse. As the researcher posits with idealized influence, the inexperience exhibited by some of the respondents may be a reason for dissent with this component as well. This notion is further supported by the idea the leaders who display inspirational motivation are able to develop an effective organizational vision (Bass & Riggio, 2012) – if officers are inexperienced in their respective roles, they may not believe in their ability to assist with such development and may therefore be unenthusiastic about sharing their thoughts.

Intellectual stimulation. Items Q13-Q16 (see Appendix B) of the survey instrument represented intellectual stimulation, characterized as the ability of a leader to keep those following him or her thinking about the task at hand, asking questions, and solving problems. Intellectual stimulation describes those transformational leaders who stimulate their followers' efforts to be innovative and creative by questioning

assumptions, reframing problems, and approaching old situations in new ways (Avolio & Bass, 1999; Bass, 1999; Bass & Riggio, 2012). The easiest item to endorse in this subscale was item Q14; *I seek differing perspectives when solving problems*. Regardless of setting, athletic trainers rarely work alone; interaction with others (physicians, administrators, professional colleagues, etc.) provides many avenues for seeking out other perspectives when faced with challenging situations, thus giving credence to the idea that this item was easy for respondents to agree with.

Individual consideration. Items Q17-Q20 (see Appendix B) represented individual consideration, characterized as a leader's ability to pay attention to individual needs and problems. All of the items in this subscale fell within one standard deviation of the item mean, indicating that most were easy to endorse within the instrument. This is not at all surprising when one considers the desirable qualities an athletic trainer should possess, including (a) communication, (b) support, (c) stamina, (d) the ability to adapt, and (e) ethical standards, just to name a few (Prentice, 2010). The results are also supported by many who identify leaders exemplifying this aspect of transformational leadership as being able to give empathy and support, maintain open lines of communication, and present their followers with challenges that will allow them to succeed (Avolio & Bass, 1999; Bass, 1999; Bass & Riggio, 2012).

Differences between academicians and clinicians. Employment of athletic trainers is expected to grow by 30% from 2010 to 2020, much faster than the average for all occupations (Bureau of Labor and Statistics, 2012). As people become more aware of sports-related injuries at a young age, demand for athletic trainers is also expected to increase. Perhaps in response to this demand estimate, the number of professional and

post-professional athletic training education programs continues to rise and discussions surrounding the future of athletic training education continue to evolve.

The educational competencies that athletic training students must demonstrate proficiency in are continuously being improved upon, with the most recent additions coming in the fall of 2012 (NATA, 2012). Changes in education inherently produce changes in clinical practice, and as the number of accredited programs increases, the amount of faculty and staff athletic trainers will also increase. Because students interact with athletic trainers in classroom as well as clinical settings, it can be inferred that students may come into contact with differing leadership styles. Therefore, a research question to address the potential existence of differences in transformational leadership behaviors between both groups of athletic trainers was posed. With respect to this third research question, the DIF analysis did not yield any statistically significant associations. The researcher posits that this may be due to a lack of responses to the specific question designed to parcel out the two groups from each other.

Although there were no statistically significant associations, some interesting findings were present regarding demographic differences as it relates to gender. In the past, leadership research has often focused on gender. Yukl (2002) writes that women are often more transformational and participative than their male counterparts. Of the 112 individuals who responded to the question designed to distinguish academics from clinicians, 79 were female (70.5%) and 59 of the 79 (74.6%) were classified as academicians. Female academicians had an average raw scale score of 4.21 while male academicians (n=20) had an average raw scale score of 4.16. Similarly, female clinicians (n=20) had an average scale score of 4.18 while male clinicians (n=13) had an average

scale score of 4.15. These findings are in support of Yukl's (2002) assertion that women display more transformative leadership characteristics than men.

Relationship to previous research. The final research question, *do the results provided by the study support existing literature related to leadership in athletic training*, relates the findings of the study to previous research. In regards to transformational leadership, the results presented here align most closely with those of Firestone (2010), who found that faculty and chairpersons of allied health programs nationwide also perceived themselves as displaying those transformational leadership characteristics most closely associated with individual consideration and less associated with intellectual stimulation.

As the findings of this study also demonstrated, intellectual stimulation, the fourth component of transformational leadership, was utilized the least by the respondents. This is consistent with the findings discussed by Zuest (2003), who noted that ATEP program directors should utilize three transformational leadership behaviors: (a) individualized consideration, (b) idealized influence, and (c) inspirational motivation, which may result in students giving extra effort. Furthermore, this study correlates with outcomes presented by Corrigan et al. (2000), who utilized the Multifactor Leadership Questionnaire (MLQ) to study the effects of an eight-hour short course on leadership training for developing transformational leadership skills in occupational rehabilitation teams. Corrigan et al. found significant improvements in MLQ factors related to individualized consideration, as was the case in this study.

Implications for Practice

Previous research has found that although there is no formal instruction of leadership competence required in athletic training education, the importance of demonstrating leadership behaviors in practice increases as an athletic training student advances (Kutz, 2010; Kutz & Scialli, 2008). The outcomes of this study support the practical application of athletic training leadership development in a variety of areas. First, improving education and training for athletic trainers at any level is achievable for any organization by focusing on transformational leadership characteristics and attributes. According to Kouzes and Posner (1995), transformational leadership occurs when a leader inspires followers to share a vision, empowers them to achieve it, and provides the resources necessary for developing their own potential. Educating future professionals to practice transformational leadership attributes such as establishing clear expectations, creating a shared vision, and inspiring and motivating others to perform beyond basic expectations is a journey all athletic trainers should be willing to take.

As Kutz (2012) discovered, leadership is demonstrated by athletic training students in their clinical education settings. Kutz (2012) postulates that preceptors may demonstrate “non-clinical” behaviors, such as leadership, as their students matriculate through a clinical education program. A second implication for this study supports the use of coaching and mentoring of athletic training students, as this area was the most difficult for current professionals in the field to endorse. To support Kutz’s (2012) assertion as well as Rost’s (1991) notion of transformational leadership as a relational process between leaders and followers, more effective mentoring in a clinical environment may be achieved through formal evaluation of the transformational

leadership style of current athletic training educators and clinicians and by assigning students to preceptors based on the results of such evaluations. Clinical coordinators should consider assigning a student who scores high on a transformational leadership scale to a preceptor who scores low on the same scale. The inverse could be considered as well; placing a student who scores low with a preceptor who scores high may foster a similar reciprocal learning environment.

A third implication of this study is the utilization of an instrument that assesses transformational leadership characteristics and attributes to prescreen athletic training applicants/candidates being considered for a leadership role at any level. The prescreening results could be used to aid the individual in developing or strengthening transformational leadership characteristics prior to taking office. Nursing organizations such as the American Organization of Nurse Executives (AONE) currently use leadership competencies established by the Health Care Leadership Alliance in 2004 as a self-assessment tool when planning for personal preparation and career goals as well as a guideline for job descriptions (AONE, 2011).

Further implications of this study may be considered when evaluating executive boards that struggle with meeting established organizational goals and strategies. As Rost (1991) determined, leadership by an individual can often overshadow the relational process that takes place between two people. Therefore, athletic training organizations should consider examining the leadership style of their members to determine the degree to which transformational leadership is demonstrated within the group. Organizational benefits to this approach, as seen in nursing, include the advanced preparation of nurses seeking expertise and knowledge in executive practice (AONE, 2011).

A final implication of this study is to challenge other researchers in the athletic training profession to further explore issues of measurement within their own areas of interest. As mentioned, Cavanaugh and Waugh (2011) describe the Rasch model as “one of the ways forward for quantitative learning environments research” (p. 14). Rasch measurement, while dispelling some assumptions related to traditional statistical approaches, is intended to complement the use of statistics rather than take its place. Once proper measurement analysis is performed, statistical techniques can be applied to possibly provide more meaningful and precise results.

Implications for Future Research

As it relates to methodology, the researcher suggest the introduction of measurement techniques into future athletic training education research as a whole to provide greater insight into the evaluation of Likert scale data as it relates to a person’s latent trait. Allowing a comparison between item response probability and an individual’s likeliness to endorse such trait items may provide for more meaningful comparisons.

When considering undertaking efforts in subsequent research, in addition to a revision of questions within the instrument to decrease redundancy, and/or development of questions that relate to athletic training more specifically, the following questions emerge and may be worthy of explanation: What leadership competencies could be developed related to transformational leadership in athletic training? When would such competencies be assessed? Would a better understanding of transformational leadership characteristics from a student perspective benefit in the mentoring process?

Understanding the transformational leadership characteristics of both clinicians and students can provide athletic training educators with an objective way to assign students to clinical experiences. Additional research needs to be done to determine if effective mentoring by students as well as clinicians improves attribute scores over time with role-modeled behaviors. At what point (entry-level or post-professional education) would mentoring benefits elicit the greatest amount of change in the professional? As a supplement to the understanding of transformational leadership among current certified athletic trainers, the researcher suggests utilizing the MLQ, or a similarly developed survey instrument, to assess the transformational leadership perceptions of athletic training students for this purpose.

Appendix A: COVER LETTER

Subject: Leadership in Athletic Training: A Comparative Analysis

My name is Kristan Yates, a doctoral student in the Department of Educational Leadership Studies at the University of Kentucky. I am conducting research (IRB Protocol No. 12-0326-X4B) on leadership among athletic training program directors and executive board members at the state, district, and national level, and thus request your help by participating in a voluntary survey. The purpose of this online survey is to gain further insight into leadership within the profession.

You were selected as a potential participant in this study because you currently serve in a leadership capacity within our profession. Completed questionnaires from all individuals in positions similar to yours will provide a means to develop the most up-to-date information about leadership within our profession. It is imperative to understand your leadership role in order to advance the knowledge of leadership within the field in a constantly changing educational and health care environment.

Your participation in this research by clicking on the survey link below is an indication of your informed consent. Your responses to the survey will be kept confidential. You will not be personally identified in any way because the survey does not request data that can identify you. There are no known risks for participating in this study, nor are there any consequences if you elect not to participate. The survey should take approximately 5-10 minutes to complete.

If you have questions about this study, please feel free to contact me directly via the contact information below. If you have questions about your rights as a research volunteer, please contact the University of Kentucky Office of Research Integrity at (859) 257-9428 or toll-free at 1-866-400-9428. You may also contact my faculty advisors in the Department of Educational Leadership Studies at the University of Kentucky--Dr. Lars Bjork (lbjor1@uky.edu) and Dr. Kenneth Royal (kdroya2@uky.edu)--with any questions.

Thank you in advance for your assistance with this important project. To ensure that your valuable responses are included, please be sure to submit your survey by May 10, 2012.

Sincerely,

Kristan Michelle Yates, MS, ATC, EMT-B
University of Kentucky
Phone: (859) 398-5398
E-mail: kristan.yates@uky.edu

[\\$1://SurveyLink?d=Take the Survey}](#)

Appendix B: PERMISSION OF USE LETTER

For use by Kristan Yates only. Received from Mind Garden, Inc. on March 30, 2012

To whom it may concern,

This letter is to grant permission for the above named person to use the following copyright material for his/her thesis research;

Instrument: ***Multifactor Leadership Questionnaire Form 5X Short***

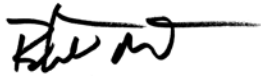
Authors: ***Bruce Avolio and Bernard Bass***

Copyright: ***1995 by Bruce Avolio and Bernard Bass***

Five sample items from this instrument may be reproduced for inclusion in a proposal, thesis, or dissertation.

The entire instrument may not be included or reproduced at any time in any other published material.

Sincerely,



Robert Most
Mind Garden, Inc.

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