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# Problem Solving, Decision Making, and Kirton Adaption-Innovation Theory in High-Performance Organizations

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Abstract

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## Abstract

Research on high-performing nonprofit boards has indicated a positive relationship between a board's strength and an organization's effectiveness; however, how boards achieve success remains relatively unknown. The Kirton adaption-innovation (KAI) theory was used to examine board members' cognitive styles in relationship to facilitating problem solving and decision making. This nonexperimental, quantitative study included archived nonprofit board data from 2 American Society of Association Executives (ASAE) studies that had addressed the high performance of boards and factors associated with organizational success. A total of 102 randomly selected, high-performing nonprofit board members completed the KAI Inventory, which was used to measure cognitive style on a continuum; participants also answered questions from the second ASAE study to indicate board performance. Correlational and regression analyses were used to determine whether cognitive style on problem solving and decision making predicted high performance of boards. Results showed that cognitive style was not a significant predictor of problem solving; however, participants with an innovation cognitive style provided answers to the decision-making performance questions that were noticeably lower than participants who were classified as adaption. Findings might be used by nonprofit board members to enhance individual growth, increase organizational agility, and improve problem solving for effective decision making to ensure nonprofit board excellence.

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## Dedication

This dissertation is dedicated to my family, friends, colleagues, and academic mentors who provided the support and inspiration for this amazing intellectual journey.

I am grateful for the love and support of my parents. My father, who passed away in the second year of this endeavor, was adamant that I follow my dreams; his words of wisdom echo in my mind daily. I was honored to assist my mother after his passing and found inspiration in the courage that she showed in grieving the loss of her beloved husband of 60 years. I extend my gratitude to my two brothers and their wives, children, and grandchildren, all of whom provided a sense of connection that deeply fueled me.

My appreciation extends to the friends and colleagues who supported me in several ways, of which many remain transparent yet profoundly meaningful. I am grateful for friends who supported me in my grieving process, lifted my spirits when challenges appeared overwhelming, and joined me on my physical journeys worldwide. In addition, I'm indebted to colleagues from the John Maxwell Team who provided insightful dialogues that kept me focused on the importance of self-development for serving others and engaging in positive social change. I'm thankful to the colleagues whom I met at Walden residencies and those who provided encouragement and honest feedback as members of my academic and dissertation cohorts.

I share my genuine appreciation for the advice of Dr. Curtis Friedel, whose Kirton A-I theory and KAI Inventory expertise proved instrumental in the design and completion of this dissertation. Likewise, I am grateful to Dr. John Schmidt for his leadership and steadfast attention to detail as chair and Dr. Robert Haines for being on my committee.

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# Chapter 1: Introduction to the Study

Striving for excellence in nonprofit board performance in the 21st century "requires much more than good intentions and a passion for mission" (Gazley & Bowers, 2013, p. 8); it also demands commitment and responsible leadership. Examining the characteristics of high-performance organizations (HPOs), specifically high-performance nonprofit boards, provides a deeper understanding of what is necessary to create the patterns and behaviors necessary to support the superior performance of nonprofit board executive directors and members responsible for serving society in this essential role (Gazley & Bowers, 2013). This study of organizational excellence addressed the complexities of the organizational characteristics required for excellence and the application of individual cognitive styles of nonprofit board members through Kirton's (1976) adaption-innovation (A-I) theory. The researcher used studies from the American Society of Association Executives (ASAE, 2013) to provide archival data related to the self-reported performance assessments of 1,585 nonprofit board members to establish a baseline and prioritization of high-performance boards (Gazley & Bowers, 2013). This baseline and administration of the KAI Inventory to nonprofit board executive directors and members offered a greater understanding of their cognitive preferences, levels, and gaps to improve group interactions (Kirton, 2011). In addition, application of the Kirton A-I theory provided important insights into individual and overall board performance in the pursuit of organizational excellence in support of positive social change (Kirton, 1976).

## Background

The search for excellence in private and public sector organizations is not a new pursuit (Peters & Waterman, 1982; Young, 2002). Peters and Waterman (1982), when examining 43 top-performing Fortune 500 companies, developed the McKinsey 7-element model, which is known for its effectiveness in analyzing organizational success. Singh (2013) conducted a role study and concluded that leaders who used the model's seven key indicators of strategy, structure, systems, shared values, style, staff, and skills to align organizational issues were successful in excellence transformation. The principles outlined by Peters and Waterman provided decades of guidance to private sector organizations aspiring to excellence. However, after 30 years of economic, political, and global market changes, most of the companies that Peters and Waterman identified for excellence are now defunct, failing, or operating below past levels of excellence (Crainer, 2012). According to Peters (2001), the central flaw in their thinking was the proposition that the seven elements of success would remain constant.

Malcolm Baldrige, secretary of commerce under President Reagan, was committed to defining excellence in government through a public-sector quality management program (National Institute of Standards and Technology, 2015). After Baldrige's death in 1987, Congress passed Public Law 100-107, the Malcolm Baldrige Quality Improvement Act (National Institute of Standards and Technology, 2013). This law functioned as a catalyst to encourage public sector organizations to provide goods and services through customer-focused quality processes strategically aligned to an organization's vision and mission (Young, 2002). Dean and Bowen (1994), Evans and

Lindsay (1999), and Juran (1995) accepted the Malcolm Baldrige National Quality Award (MBNQA) for the six practices criteria and one performance criterion used to measure organizational excellence. In 2012, for the first time in its 25-year history, not one for-profit organization of the 20 million in the United States applied for the MBNQA. Since 2010, the number of health care MBNQA applications has declined 73%, and the number of education applications has declined 80%, resulting in Steel (2013) asking, "Has the Baldrige Award gone out of business?" (p. 1).

Despite the downswings in private and public sector efforts to create and sustain organizational excellence, leaders and managers have continued to show interest in its pursuit through the popularity of books like *In Search of Excellence* and *Good to Great*, as well as the attention paid to HPO literature (Collins, 2001; de Waal, 2012; Peters & Waterman, 1982; Seath, 2014). After 5 years of research, de Waal (2008) published the HPO framework, which comprises five factors: quality of management, openness and action orientation, long-term orientation, continuous improvement and renewal, and quality of employees. An important distinction in the evaluation of these factors was the discipline that HPO leaders applied in their execution through management skills and leadership styles (de Waal, 2012).

Although it is important to acknowledge the challenges that private and public sector organizations have faced in the search for excellence over the past 30 years, it also is important to note the lack of attention to what makes high-performance boards (Gazley & Bowers, 2013). These boards make up a large portion of governing entities across numerous sectors of society that include chambers of commerce; trade associations;

professional and technical societies; and social, academic, and fraternal clubs (Gazley & Bowers, 2013). These boards affect the lives of millions of people, making the focus on excellence for organizational performance outcomes essential (Rosenthal, 2012).

**Characteristics of High-Performance Boards**

Gazley and Bowers (2013) observed that previous studies had revealed the characteristics of high-performance boards as boards that behave as learning organizations, have cultures of responsibility, and accept and use the advice of experts to ensure the use of good practices in governance in relationship to organizational excellence. First, high-performance boards manifest as learning organizations through a focus on measuring improvement in the progress toward their performance goals in relationship to the vision and mission, and they invest in the personal development of members (ASAE, 2013) Second, high-performance boards distinguish themselves by taking responsibility for how well they collaborate to achieve strategic goals and model the effective leadership behaviors expected from stakeholders and staff. According to T. Holland and Jackson (1998), these boards practice a "culture of active responsibility" (pp. 132-133). Third, high-performance boards actively engage in the study and application of good governance through the variety of nonprofit research and literature available to provide good advice. However, Herman and Renz (1999) pointed out that although empirical evidence has supported the practice of good governance as a contributing factor to high performance, it has not always been clear whether good organizations are creating good boards or good boards are building more effective organizations.

**Cognitive Style Defined**

Plato asserted that people first look within themselves to understand and acknowledge basic principles about their world before using rational thought to transform knowledge, an assertion later advocated by Descartes and Chomsky and denoted as rationalism (as cited in Revlin, 2013). Aristotle's definition of the mind focused on human knowledge transfer being the result of the observations that individuals perceived in their surroundings, which was termed *empiricism* and later advocated by Locke and Skinner (as cited in Revlin, 2013). However, the revolutionary theme of 1960 brought with it a change in the way in which scholars and practitioners thought and believed about the ways that humans think and behave in relationship to their thinking, which gave birth to cognitive psychology (Revlin, 2013).

Goldstein and Blackman (1978) defined cognition as "a hypothetical construct that has been developed to explain the process of mediation between stimuli and responses. The term cognitive style refers to characteristic ways in which individuals conceptually organize the environment" (p. 4). Cognitive style is related to the process of interpreting stimuli into meaningful representations through the transformation of information. Some contemporary thinkers have proposed that cognitive style includes individuals' personalities and processes used in the function of cognition, whereas others have provided the analogy of a bridge between personality and intellectual measures (Sternberg & Grigorenko, 1997). Neisser (1997), who published the first textbook on cognitive psychology, defined cognition as "those processes by which the sensory input is transformed, reduced, elaborated, stored, recovered, and used" (p. 3). Kozhevnikov

(2007) examined cognitive style from a modern psychological framework and purported that cognitive style is involved with the execution of the complex concepts of "problem solving, decision making, and judgment" (p. 464). These complex concepts in action create the opportunity to examine individuals' cognitive styles from highly adaptive or highly innovative perspectives and to measure their ability to deal with the cognitive gaps of coworkers in relationship to organizational outcomes that moves them toward excellence (Kirton, 1976).

## Adaption-Innovation

Kirton's (1976) A-I theory provides a fundamental understanding and insight into individuals' preferred cognitive styles in relationship to a continuum from highly adaptive to highly innovative. Kirton's A-I theory delineates how these preferences affect differences in the ways that people do things, the outcomes that they achieve, and how they interact with organizational processes and other environments in life (Kirton, 2011). The A-I theory resulted from observations of management initiatives in relationship to the assumption that everyone solves problems and is creative because the same brain function produces both outcomes (Kirton, 1961). The theory's focus is on style in the process of distinguishing between the level and style of creativity, problem solving, and decision making while measuring potential capacity (talent or intelligence) and learning level (management competency) through different means (Kirton, 2000).

### Relationship to Problem Solving

The gap in understanding problem solving and cognitive styles in an organizational context has been the basis for a large body of empirical research since the

A-I theory was developed (Occupational Research Centre, 2015). More than 400 books, journal articles, theses, and other pertinent publications are listed in *Publications and Current Work Using Adaption-Innovation Theory* (Occupational Research Centre, 2015). Kirton (1977) developed the A-I theory with the desire to assist organizational leaders in understanding cognitive gaps, which Stum (2009) defined as the "wide arrays of cognitive styles" (p. 75) found between members of diverse workforces. Identifying cognitive style through the A-I theory is based in individual preference; specifically, in relationship to problem solving, it relates to the amount of structure that individuals apply to begin the examination of organizational performance. On nonprofit boards, it was important to explore how the leaders and members of the boards thought and processed information; therefore, the first step was to define the primary element of cognitive style: cognition (Kirton, 2011). The A-I theory provides a framework for leaders to value the members of their workforce on either side of the cognitive gap and facilitate more effective problem solving and decision making (Stum, 2009).

**Effects of Decision Making**

Goldsmith (1994a) reported that the A-I theory focuses on adaption and innovation within an organizational context and offers a partial understanding of the effects on decision making related to the behavioral differences associated with adaption and innovation. Although A-I theory stresses individuals' preferences for problem solving, it is the interaction between individuals in the act of making decisions that provides insight into the dynamics of cognitive diversity (Kirton, 2011). The deeper the understanding that individuals have of their preferences, the more they can appreciate the

differences in others' preferences, thereby reducing their stress and using their preferences as a strength to the work unit (Kirton, 2011). Kirton (2000) implied that organizations require highly adaptive and highly innovative individuals because of the strengths and weaknesses they offer the work unit and that the adaptor's strength might be around an innovator's weakness, or vice versa.

## Importance of Organizational Excellence

The importance of organizational excellence predates its application to contemporary organizational performance. According to Aristotle, "Excellence is never an accident. It is always the result of high intention, sincere effort, and intelligent execution; it represents the wise choice of many alternatives - choice, not chance, determines your destiny" (as cited in Bartlett & Collins, 2011, p. 31). Looking back over the last 30 years since Peters and Waterman (1982) reported on what constituted organizational excellence and the MBNQA set the standards for excellence for organizations to work toward, the pursuit of excellence has generated numerous frameworks (Seath, 2014). For example, total quality management (TQM), business process reengineering, benchmarking, Lean, Six Sigma, strategic planning, teamwork, and continual process improvement were developed and implemented with the intention of guiding leadership efforts to achieve organizational excellence (de Waal, 2012; Prajogo & Sohal, 2002).

## Problem Statement

Gazley and Bowers (2013) approached the search for excellence in nonprofit board performance through an Indiana University- and ASAE-sponsored survey of nonprofit chief executive officers (CEOs) and executive directors from 1,585 member-

serving organizations. Gazley and Bowers evaluated board performance by asking the CEOs and executive directors to rate the elements of organizational environment, board recruitment, selection, structure, strategic planning, decision making, governance challenges, and board development using analytical techniques. Although Gazley and Bowers provided baseline data for decision making, their survey did not provide an understanding of how leaders solved problems together or how individual cognitive styles affected group problem solving and decision making in relationship to board outcomes on organizational performance.

In addition, Stum (2009) pointed out that "there has been no research to date correlating KAI Inventory with leading volunteer/nonprofit organizations" (p. 75). This statement was further verified in a review of the topics of the numerous publications from the Occupational Research Centre (2015). The current study addressed nonprofit board executive directors' problem solving and decision making using the KAI Inventory to determine whether it could predict performance outcomes and to determine whether A-I theory variables were tied to high-performing nonprofit boards. Administering the KAI Inventory can help executive directors and individual board members to understand their cognitive levels of either high adaption or high innovation and manage their associated cognitive gaps, thereby benefiting the individuals on the nonprofit board, the outcomes that they were responsible for, and the people whom they served in the pursuit of organizational excellence (Kirton, 2011).

## Purpose of the Study

The purpose of this study was to use A-I theory to examine the relationship between cognitive styles and problem-solving and decision-making outcomes of nonprofit board performance to determine whether cognitive styles influenced leaders' ability to facilitate members' problem-solving capacity and to manage cognitive gaps to ensure organizational excellence. The results served to fill the gap in the literature regarding the use of the A-I theory in nonprofit organizations to assist nonprofit board leaders and members by providing important insight into ways to improve their problem-solving and decision-making processes in relationship to their continual pursuit of excellence.

## Research Questions and Hypotheses

The primary aim of this study was to understand how to achieve excellence in nonprofit organizations by examining how board leaders and members' cognitive styles influenced problem-solving, decision-making, and organizational outcomes in HPOs. Two research questions (RQs) and hypotheses guided the study:

RQ1: Does a nonprofit board member's cognitive style predict problem-solving outcomes?

$H_{01}$: A nonprofit board member's cognitive style, as measured by the KAI Inventory, does not predict problem-solving outcomes, as measured by the Nonprofit Board Performance Questionnaire (NBPQ).

$H_{a1}$: A nonprofit board member's cognitive style, as measured by the KAI Inventory, predicts problem-solving outcomes, as measured by the NBPQ.

RQ2: Does a nonprofit board member's cognitive style predict decision-making outcomes?

$H_{02}$: A nonprofit board member's cognitive style, as measured by the KAI Inventory, does not predict decision-making outcomes, as measured by the NBPQ.

$H_{a2}$: A nonprofit board member's cognitive style, as measured by the KAI Inventory, predicts decision-making outcomes, as measured by the NBPQ.

## Theoretical Framework

The framework grounding this study was Kirton's (1976) A-I theory. Kirton (2011) described this theory as "a model of problem solving and creativity, which aims to increase and reduce conflict within groups" (p. 3). According to Kirton (2011), individuals have different cognitive styles that determine their approach to creativity, problem solving, and decision making. These individual style differences span a continuum that places individuals on a scale of highly adaptive to highly innovative. Basic to the A-I theory is that all people are creative and that in the creative process, they create from either a highly adaptive or a highly innovative preference (Kirton, 1978). Adaptors think in terms of doing things better within the constraints of systems rules, and innovators effect change by doing things differently without a focus on the systems involved (Kirton, 2011). It is essential that individuals appreciate one another for their differences and work together for mutual benefit and positive change.

Kirton (2011) stated:

> Problem solving leaders live in a world in which key problems have become so complex, the time scales for solutions so short, and the demand for

> implementations so polished that no single person can dominate this process. Leaders need more than specialized knowledge and experience about the core problem and possible solutions. They need knowledge and skill in managing and inspiring diverse problem solvers. (p. 2)

The A-I theory was an appropriate framework for addressing the influence of cognitive style on problem solving and decision making in relationship to high performance on nonprofit boards.

Kirton (1977) developed the A-I theory on cognitive styles based on the distinct preferences of efficiency (E), rule/group conformity (R), and sufficiency of originality (SO) according to observations of human interaction, which related to the integrated works of Weber (1946), Merton (1957), and C. R. Rogers (1959). Kirton's (1977) work reflected the writings of Weber, whose thoughts on bureaucratic structure were echoed in the A-I theory E factor, which favored adaption on the A-I theory continuum because adaption aligned with efficiency. The scholarly observations posed in Merton appeared to relate to the design of the A-I theory R factor, which reflected Merton's assertion that conformity was a byproduct of bureaucratic pressure imposed on individuals to ensure its attainment. Kirton (1976) associated high adaptor behavior as predictable to the pressure, whereby high innovators would be immune. The work of C. R. Rogers appeared to align with Kirton's development of the A-I theory SO factor, which related to the generation of ideas. Kirton (2000) clarified that differences in cognitive styles relate to the generation of ideas by noting that "the innovator claims that the adaptor originates with a finger on

the stop button [while] the adaptor, in turn, sees the innovator as an originator who cannot find such a button" (p. 25).

## Nature of the Study

This quantitative study followed a nonexperimental design. In nonexperimental designs, researchers do not manipulate any of the independent variables (IVs) or randomize participants into groups or include the use of control groups (Garson, 2013). The IVs were adaption and innovation cognitive styles, and the dependent variables (DVs) were problem solving and decision making. The target population included participants on established nonprofit boards of directors who were invited to participate in the study because of their boards' high level of performance and membership of 17 to 20 individuals. The researcher used a randomized probability sampling strategy.

The study used archival data from two studies sponsored by the ASAE between 2012 and 2015 to determine the most appropriate boards to invite to participate in the current study. The first study consisted of an extensive survey of nonprofit CEOs and executive directors in the United States, with the 1,585 nonprofit boards organized from the highest performing to the lowest performing (Gazley & Bowers, 2013). The second study, conducted by Dignam and Tenuta (2015), provided additional performance data from a board member self-assessment instrument that required board members to rate nine areas of responsibility by commenting on 68 items related to the responsibility in question. These items were used to develop a questionnaire to collect participants' responses about related board performance. The KAI Inventory was the psychometric instrument used to assess the cognitive styles of the executive directors and members of

boards who volunteered to join the study to assist leaders in managing the outcomes associated with cognitive gaps (Kirton, 2011) reflected in the data. These two instruments were used for data collection, and the responses were used for statistical processing.

The initial sample size proposed for the current study was 200 participants randomly chosen from 12 high-performing nonprofit boards. According to Gazley and Bowers's (2013) survey findings, nonprofit boards vary in size "from three to 118 members, with a median of 15 and the heaviest concentration at the 12 to 15 range" (p. 29) considered the most successful, representing the healthiest organizations in relationship to budget and membership. Dignam and Tenuta (2015) found that board size mattered in terms of self-assessment performance, with a median of 16 and a range of 17 to 20 members the most productive. Therefore, the proposed sample size in terms of participants was 200. The KAI Inventory was used to measure the IVs of adaption and innovation cognitive styles. The plan was to administer the instruments in two e-mail-generated, web-based formats to each volunteer nonprofit board participant, collect and secure the data, and analyze the data to test the hypotheses.

## Significance of the Study

This research contributes to the larger body of knowledge by applying the A-I theory to nonprofit organizations. By examining the IVs of adaption and innovation in relationship to A-I theory cognitive styles to the DVs of problem solving and decision making on high performance in nonprofit organizations, board leaders could gain more understanding and make more intentional choices in their pursuit of excellence. The knowledge gained from this study could assist nonprofit board executive directors in

understanding how to solve problems and make more informed decisions to overcome challenges and meet specific targets. In addition, examining the influence of cognitive styles defined by Kirton (2011) on problem solving and decision making in high-performance nonprofit organizations has a broad range of implications for positive social change.

This study of nonprofit organizations creates a baseline for their unique climate, with strategic benefits ranging from individual learning and growth to the ability of organizations to offer agile change where and when needed in the service of their members. Second, this research offers practical applications to assist nonprofit board leaders to improve problem-solving and decision-making efforts by having a deeper understanding of the strengths of adaption and innovation styles. This understanding could enhance the process of change through open dialogue, mutual respect, and an appreciation of the cognitive capacity of others while avoiding disruptive conflict that often blocks new initiatives and stifles productive change. Third, this research might assist nonprofit board leadership in learning to manage the cognitive gaps that can undermine interpersonal relationships and prevent organizations from moving forward in the pursuit of excellence.

## Definitions of Terms

The following terms were operationally defined for the purposes of this study:

*Adaptive:* An individual's preferred cognitive style to "do things better." Individuals with this style create within the rules of an established system while generating a few ideas specific to a narrow basis (Kirton, 1976; Stum, 2009).

*Behavior:* "Human behavior often has been explained in terms of one-sided determinism. In such modes of unidirectional causation, behavior is depicted as being shaped and controlled by environmental influences or driven by internal dispositions" (Bandura, 1999, p. 160). Kirton (2011) postulated that behavior is a combination of cognitive style and coping behavior associated with the environment in which the individual is interacting.

*Bridging:* "One way of closing cognitive gaps between groups is by the judicial use of those best placed to bridge and who are skilled in the role…This person needs careful selection and thorough training (in the social skills needed to be a bridger) and be trusted with all the information that may hitherto have been available only to selected members of the in-group" (Kirton, 2011, p. 251).

*Cognitive affect:* The priority placed on the search for the problem selection in the process of finding a solution through motivation (Kirton, 2011; Schunk, 2000).

*Cognitive climate:* The preferred cognitive style (mode) held by a group of individuals solving problems together (Kirton, 2011).

*Cognitive effect:* Cognitive functioning within a specific environment produces problem solving, impacts behavior, and creates consistent patterns associated with personality. Adaption-innovation is one of the patterns. Cognitive effect is an element of cognitive functioning and includes preferred cognitive style, potential, and level. "Adaption-innovation cognitive (problem-solving) style lies within the discipline of psychology, more specifically as an element within cognitive effect, which is itself within the field of cognitive function" (Kirton, 2011, p. 6).

*Cognitive style:* The individual's preference for processing information (Sternberg & Grigorenko, 1997). "These cognitive styles are common to everyone and are manifest in any situation where creativity, problem solving, and decision making are applicable" (Kirton, 2011, p. 624). The KAI Inventory operationalized cognitive style through the constructs of sufficiency of originality, efficiency, and rule/group conformity (Kirton, 2011).

*Cognitive style gap:* The gap related to the degree of numerical separation between the cognitive style scores of two individuals on the KAI Inventory (Kirton, 2011).

*Coping behavior:* A learned skill using individual motivation to deal with differences in cognitive styles between oneself and others; this ability to cope in known to last only for short periods of time and with various levels of intensity (Kirton, 2011).

*Decision making:* According to Trewatha and Newport (as cited in Akrani, 2011), "Decision making involves the selection of a course of action from among two or more possible alternatives in order to arrive at a solution for a given problem" (p. 4). "A psychology of decision making requires a psychology of action grounded in enabling and sustaining efficacy beliefs" (Bandura, 1997, p. 49).

Environment: Kirton (2011) defined environment within the context of individuals interacting throughout a problem-solving process. These environments consist of people who work together and solve problems together while providing feedback to one another.

*Goal:* "A cognitive representation of what it is that an individual is trying to achieve in a given situation" (Wentzel, 2000, p. 113).

*Innovative:* A cognitive style of individuals who prefer to "do things differently" and who create by altering the rules of an established system while generating numerous ideas specific to a strategic basis (Kirton, 1976; Stum, 2009). Innovative style contrasts with adaptive style as it is "an ability to 'do things better,' and the ends of this continuum are labeled *adaptive* and *innovative,* respectively" (Kirton, 1976, p. 622).

*Instinct:* Kirton (2011) defined instinct in human beings as nonexistent and suggested that supposing our species has instinct is misleading. Human beings do not have complex programming producing exact behaviors, as in a specific species of birds building their nests or the behavior of bees. Human beings must trust their abilities to learn all the necessary information to perform problem solving by engaging the best use of their brain.

*Organizational culture:* The process of individuals assimilating through the "external adaptation and internal integration taught to new members as to correct way to perceive, think, and feel in relation to those problems" (Schein, 1990, p. 111).

*Organizational excellence:* "Organization excellence is delivering sustained superior performance that meets and where possible exceeds the expectations of stakeholders" (Webster, 2011, p. 1).

*Paradox of structure:* Kirton (2011) described cognitive structure as "both enabling and limiting" and stated that "sums up the paradox of structure" (p. 25). More specifically, highly adaptive individuals tend to be grateful for the enabling aspects

perceived by the structure, whereas highly innovative individuals are often impatient with the limitations that the structure represents.

*Problem solving:* As defined by Soden (1994), problem solving is a desired need to find a solution, although not always immediately knowing how to arrive at the solution. Polya (1957) defined it as "finding a way out of a difficulty, a way around an obstacle, attaining an aim that was not immediately available" (p. 12).

## Scope of the Study

The scope of this study was limited to participants on nonprofit boards who were included in studies by Dignam and Tenuta (2015) as well as Gazley and Bowers (2013). Participation in this study was limited to boards with 17 to 20 board members. Each volunteer participant was administered a performance questionnaire and the KAI Inventory in e-mail-generated and secure web-based formats. The constructs of organizational performance and excellence were researched from the perspective of understanding patterns of related behaviors (Gazley & Bowers, 2013); the constructs of cognitive style, problem-solving preferences, and decision-making preferences were researched from individual, group, and leadership perspectives (Kirton, 2000).

## Assumptions

The assumptions were related to organizational excellence goals, cognitive style influence on organizational performance, and the importance of understanding cognitive diversity. The first assumption was that organizational excellence is a worthwhile and attainable goal for nonprofit board executive directors and board members to pursue. According to Gazley and Bowers (2013), "CEOs value the deliberate board processes

that can support consensus-based decision making and Board directors play a more central role in getting work done than do other board officers" (p. 51). The second assumption was that the cognitive styles and problem-solving and decision-making preferences of nonprofit board leaders and members influence the performance levels of boards. The researcher also assumed that nonprofit board executive directors lead and facilitate by using their preferred cognitive style, that is, adaptive or innovative, and have a responsibility to influence the development of cognitive diversity among board members. Finally, the researcher assumed that the greater the understanding and appreciation nonprofit executive directors and members have for cognitive diversity, the more often mutual respect will be reflected in their interactions and the more successful the boards will be in attaining organizational excellence.

## Limitations

Limitations of this study included board choice, data collection, and coping skills. Initial data were limited to the 1,585 boards studied by Gazley and Bowers (2013) that provided information on highest performing boards' factors, and the 75 boards in the Dignam and Tenuta (2015) study containing self-assessment data. This information formed the data sets for initial board selection decisions made in coordination with the researchers at the ASAE and the CEOs of nonprofit boards interested in participating. This researcher targeted boards having 17 to 20 members and chose 12 boards for the study. This choice was predicated on the characteristics relative to a set of criteria to ensure a homogeneous sample: board size of 17 to 20 members; 501(c)(3) tax status (charitable, educational, and scientific); and single organizations with no affiliates,

chapters, or sections. The CEOs of those boards were asked to forward an e-mail invitation to their respective boards' executive directors and at least 12 to 15 board members at random. The invitation included the purpose of the survey and a request that interested individuals provide informed consent if they were interested in participating.

Through the informed consent process, this researcher also had to ensure that all board members recommended by the CEOs understood the time commitments of their participation and were volunteer participants in the process. Geographical limitations were reduced by the online administration of the performance questionnaire and the KAI Inventory; however, administration of the KAI Inventory also was limited by the inability of the researcher to provide face-to-face instruction and feedback to the individual participants during data collection. In addition, each volunteer received a participant identification code to ensure deidentification of individual data and maintenance of the participants' privacy.

The researcher worked with the ASAE representatives and the volunteer board members chosen for this study to collect the data. Although the KAI Inventory was administered using the same methodology across the participant spectrum, the self-reported nature of the inventory had the potential to limit the accuracy of the data. The online functioning of the performance questionnaire and the KAI Inventory instrument data collection allowed the participants to take the inventory in a wide array of situations unknown to the researcher, which could have limited the accuracy of the data. In addition, not knowing the climate of the boards from the relationships already established by the CEOs and executive directors or the interpersonal relationships of the members

within the groups could have provided limitations during the findings and implications phases. This cultural dynamic could have resulted in individual anxieties affecting the usability of their KAI Inventory cognitive style, which could have further limited the findings (see Kirton, 2000).

Because the influence of coping skills is central to the application of cognitive styles in relationship to organizational outcomes, additional limiting variables could have included the unknown coping skills not only of the executive directors but also of the individual board members (Kirton, 2011). These coping skills could have included the leadership abilities, management proficiencies, communication skills, and personal motivation of the CEOs and executive directors. Other limitations could have involved board size; selection procedures; board environment; or the attitudes of some nonprofit experts, who might have suggested that "effective governance by most nonprofit boards is rare and unnatural" (B. Taylor, Chait, & Holland, 1996, p. 36).

## Summary and Transition

The pursuit of excellence has been a projected goal of numerous private and public sector organizations for several decades, with the efforts of ASAE research between 2013 and 2015 highlighting the possibilities by prioritizing 1,585 boards in the quest to answer one question: What makes high-performing boards? This study included the results of the ASAE studies to examine the cognitive styles of nonprofit board members and create a baseline for the application of these individual cognitive styles in relationship to problem solving and decision making. The findings might provide nonprofit board executive directors and members with a deeper understanding of their

unique organizational climates; individual cognitive styles; and the strengths of adaption and innovation styles, both of which can be leveraged to improve board performance in the pursuit of excellence.

Chapter 1 introduced this study with an overview of the studies and instruments that outlined the characteristics of high-performing nonprofit boards and definitions associated with cognitive style. This chapter addressed A-I theory in relationship to problem solving and decision making and their importance to organizational performance and excellence. This introductory chapter also included the problem statement, purpose statement, nature of this study, RQs, and hypotheses. The theoretical framework, which offered the foundation for the study, was supported by a list of definitions of terms used in the study. The scope of the study outlined the process and participants essential to this research, and it presented the applicable assumptions and limitations associated with the outcome of this study on the ongoing pursuit of organizational excellence.

Chapter 2 addresses current and historical literature related to the importance of understanding the characteristics of high-performance nonprofit boards by examining the history of cognitive style, problem-solving, and decision-making research. This chapter pays special attention to understanding the theoretical foundation of A-I theory related to the management of cognitive gaps. The review of the literature associated with the definitions of cognitive styles, problem solving, decision making, and private and public sector organizational excellence offers insight into the fundamental dynamics of problem solving, decision making, and A-I theory in HPOs. Chapter 2 explores the research outlining the historical view of organizational excellence, the importance of creating

high-performance boards, and the assessment of boards' operating norms and decision making. The significance of cognitive styles in the outcomes of board members' behavior relative to board performance and organizational excellence was supported in the literature review.

In Chapter 3, the research method, design, and approach are elucidated through the provision of details about the setting, sample size, and procedures of the study. Next, a thorough delineation of the two archival studies, namely, ASAE Gazley and Bowers (2013) and Dignam and Tenuta (2015), and the two instruments, that is, the NBPQ, developed from the Board Self-Assessment Questionnaire, and the KAI Inventory used in this study, presented a foundational predictive structure. The characteristics of the participants, along with the data collection and analysis protocols, are discussed in detail. This chapter also addresses ethical considerations in relationship to the design, approach, methods, data collection, and data analysis. In addition, Chapter 3 provides an accurate review of the threats to the validity and reliability of the study.

Chapter 4 describes the target population, sample, and participants, and defined the instrumentation and variable constructs. It then presents the results of correlation, regression, and *t*-test analysis presented in textual and table format to include a discussion on statistical significance. Chapter 4 also investigates the correlation and reliability and the information related to the assumptions. It concludes with the hypothesis testing of each RQ. In conclusion to the study, Chapter 5 addresses the findings through a discussion of the theoretical and practical implementations. Limitations encountered during the study are described, and future research recommendations are offered.

# Chapter 2: Literature Review

The purpose of this quantitative study was to examine relationships between cognitive styles, problem solving, and decision making, and nonprofit board performance, specifically high-performing nonprofit boards. The researcher also sought to determine whether the cognitive styles of nonprofit board leaders influenced their ability to facilitate members' problem-solving capacity and manage cognitive gaps among board members to ensure organizational excellence. The objectives of the study were as follows:

1. Determine whether the cognitive style of a member of a nonprofit board could predict problem-solving outcomes.
2. Ascertain whether the cognitive style of a member of a nonprofit board could predict decision-making outcomes.
3. Establish whether a nonprofit board leader's cognitive style could predict the ability to facilitate members' problem-solving capacity.
4. Verify whether a nonprofit board leader's cognitive style could predict the ability to manage cognitive gaps among board members.

Chapter 2 addresses these objectives through a systematic review of pertinent literature on cognitive style, problem solving, decision making, nonprofit board performance, and organizational excellence. Specific attention was paid to the A-I theory (Kirton, 2011), which provided the theoretical foundation for this study. The researcher examined numerous studies conducted using A-I theory in relationship to cognitive style and human behavior in the workplace. This chapter presents a review of studies that

addressed high-performance boards, operating norms and decision making, nonprofit board performance, and the significance of cognitive style in organizational excellence. Also provided is a historical review of the literature grounding cognitive style research. Chapter 2 begins with a description of the strategy used to research the literature.

## Literature Search Strategy and Focus

The challenges of associating the variables of cognitive styles, problem solving, and decision making with nonprofit board performance and overall organizational excellence were numerous and complex; determining the most effective literature to use in the process was essential to overall success. the researcher conducted a broad search of books and articles by author, topic, and function using Walden University's databases. The selection of databases specific to psychology subject areas resulted in finding the initial scholarly works relative to this study's content. The researcher used various key words and phrases, including *adaption*, *cognition*, *cognitive style*, *decision making*, *innovation*, *leadership brilliance*, *management change*, *nonprofit board*, *organizational excellence*, *performance*, *problem solving*, and *thinking styles*. The initial search in the EBSCOhost search tool with this key word list returned 40,613 search results, which required a strategy to refine the searches.

Examination of the literature revealed many underlying issues, including the interconnectivity to cognitive style and behaviors in the workplace, cognitive influence on a leader's ability to facilitate group outcomes, and possible methodologies for employing the most effective performance assessments. Articles on cognitive styles from either an individual application perspective or a leadership influence on organizational

performance indicated fundamental issues relative to problem solving and decision making. The research on organizational excellence offered a lens to examine the evidence of improvement possibilities for nonprofit boards. This search strategy, which produced several peer-reviewed articles and books published from 1930 to 2016, offered insights from causation to solutions.

PsycARTICLES, PsycINFO, and the SocINDEX databases, as well as the Google Scholar search engine, were helpful in identifying articles and books with methodologies and themes related to the history and study of cognitive style. The Business and Management, Business Source/Premier Complete, and Political Science Complete databases also proved helpful. Several of the chosen works were seminal, particularly those relating to the continual and interconnected nature of problem solving and decision making in relation to other human behavioral phenomena. The search also yielded a rich collection of articles, books, behavioral science conference papers, and international cognitive studies specific to A-I theory.

The strategy to ensure a broad search into the specifics of the theoretical framework led to the KAI Distribution Centre website, which provided information on a large body of empirical research compiled since the A-I theory was developed in the 1970s (Occupational Research Centre, 2015). This research produced more than 400 books, journal articles, theses, and other publications (Occupational Research Centre, 2015). The initial search on the EBSCOhost database specific to Kirton's A-I theory returned 7,239 resources; with refinement, 61 articles were identified for application to the study. Further refinement yielded seven articles addressing A-I theory in relationship

to problem solving, decision making, organizational process, self-esteem, and entrepreneurial behaviors.

Although much of the literature provided strong foundations for the variables, there appeared to be a gap in how literature has been presented in relationship to the process of theory exploration. For example, Middlehurst (2008) not only argued for a higher level of maturity at all three levels of research, practice, and application, but also offered recommendations for possible solutions. Middlehurst supported more emphasis on leadership learning because it could deliver better science and art in the battle of better outcomes. Therefore, this researcher continued searching for more scholarly works from the perspectives of researchers, practitioners, and leaders who approached the subject of cognitive styles from a higher level of maturity and with an eye on the goal of integrating theory, practice, and application to understand cognitive styles and encourage mutual respect among nonprofit board members to achieve organizational excellence. This focus led to the historical literature on cognition and the development of theories associated with the ways that humans think and what constitutes the connection between cognitive styles and behavioral outcomes.

## History of Cognitive Style Research

Research into cognitive functioning, the stability associated with it, and the ability of individuals to access and process information in the psychological dimension has produced several studies addressing the term *cognitive styles*, which emerged and "peaked between the late 1940s and early 1970s" (Kozhevnikov, 2007, p. 465). Several definitions of cognitive style accompanied this growth of theoretical and applied studies

focusing on individual differences in processing information from the perspectives of categorizing, sorting, and forming conceptual thoughts and ideas. The history of cognitive style research dates back to before credit was associated with the term. Allport (1937) introduced the term cognitive style in early investigations of centralized traits of personality. However, the term was not used in the study of cognitive influence in human thinking styles until later research related to cognition (Kozhevnikov, 2007).

The formal studies commenced in the early 1940s with the experiments of Hanfmann (1941), Witkin and Ash (1948), and Klein (1951). Hanfmann reported that individuals organized cognitive tasks by either a perceptual or a conceptual approach when grouping blocks, with the conceptualizers developing hypotheses before determining the structure of their organization. Witkin and Ash used the Rod-and-Frame Test experiment, which showed that people displayed significant differences in how they perceived the orientation of a rod in different surroundings. Witkin et al. (1954) used the same methodology as part of their broad test application and found that the participants could be divided into field dependent, those who were dependent on field surroundings, and field independent, those who showed very low dependency on fields.

In the early 1950s, Klein studied the accuracy with which individuals used judgment when perceptual stimuli continually changed. Klein found that individuals could be divided into two groups, namely, sharpeners and levelers. Sharpeners were defined by the way they applied contrast and a high level of differentiation, whereas levelers ignored differentiations and focused on similarities in the given stimuli (Klein, 1951).

The introduction of the term cognitive style resulted from the examination of the relationships between individual personality and perceptional differences; the initial reference to the concept of an individual's worldview associated with adaption was termed *perceptual attitudes* (Klein, 1951; Klein & Schlesinger, 1951). Witkin et al. (1954) asserted that close connections were related to individual cognition and described them as "an individual as a holistic entity" (p. 15). Holzman and Klein (1954) expanded on this theme by using "generic regulatory principles" or "preferred forms of cognitive regulation" to define cognitive styles in relation to an "organism's typical means of resolving adaptive requirements posed by certain types of cognitive problems" (p. 105). By 1954, cognitive style research was assessed by Murphy (as cited in Witkin et al., 1954) as "a huge forward step in the understanding of the relations of personalities to their environment . . . a new step toward the maturity of American psychological science" (p. 36).

As the 1960s approached, the cognitive style of research moved into a realm of exploration of greater complexity and an association to problem solving with a strong reliance on dichotomies and continuums. These strategies opened the psychological experimental measurement field, which drove several studies including those on range of scanning and constricted/flexible control (Gardner, Holzman, Klien, Linton, & Spence, 1959); conceptual complexity: abstract/concrete (Harvey, Hunt, & Schroder, 1961); field articulation: element/form articulation (Messick & Fritzky, 1963); and locus of control: external/internal (Rotter, 1966). In the 1970s, researchers expanded on the themes of complexity, problem solving, and learning, with several researchers defining the

following cognitive styles: visualizer: imager/verbalizer dimensions (Paivio, 1971; A. Richardson, 1977); holist-serialist (Pask, 1972; Pask & Scott, 1972); conceptual articulation: complexity/simplicity (Messick, 1976); and adaption/innovation (Kirton, 1976, 1977). As the 1970s came to an end, cognitive scientists were losing interest in experimental studies, and the applied sciences experienced an increase in publications focused on the practical integration of problem solving, learning, and decision making.

The 1980s opened a new era for research on cognitive style as the need to understand individual differences in cognitive functionality focused on the practical associations of decision-making styles, personality styles, and learning styles (Kozhevnikov, 2007). Kirton's A-I theory introduced a cognitive style in the managerial field that measured an individual's preference on a continuum from highly adaptive to highly innovative, defining this dimension as "a preferred mode of tackling problems at all stages" (Kirton, 2000, p. 5). Agor (1994) devised a decision-making model identifying three distinct styles of intuitive, analytical, and integrated, and showing that managerial styles were associated with the demographics of dominant managers across various levels of management. Another cognitive style model from this era was based on cognitive and environmental complexities. This model displayed and delineated the styles of directive, analytical, conceptual, and behavioral on a continuum from people oriented to task oriented (Rowe & Mason, 1987).

Personality styles and inventories emerged in the psychotherapy field to include the explanatory style, related to the dimensions of internal/external, global/specific, and stable/unstable and specific to control over events (Buchanan & Seligman, 1995), and the

Myers-Briggs Type Indicator (MBTI), which brought Jungian psychology into day-to-day life through the development of 16 styles of personality (Jung & Baynes, 1921; Myers & McCaulley, 1985). The foundations of explanatory style have served several theories, namely, the attribution style and the even more contemporary positive psychology, that have emerged since its conception. Although explanatory style was grounded in a traditional focus to treat depression, its application to applied psychology was enhanced through the use of the most common instrument, the Attributional Style Questionnaire (Peterson et al., 1982).

The MBTI Personality Inventory, although rooted in the theories of Jung and designed by a mother-daughter team inspired to take Jung's scholarly work to a new dimension of practicality and popularity over the past several decades, has not been without controversy (Myers & McCaulley, 1985). The reliability and validity of the MBTI Personality Inventory have been challenged numerous times over the years, primarily because of the stated belief that the psychometric instrument can predict individual career selections, educational choices, and other life decisions (Kroeger & Thuesen, 1988). Even though the MBTI's immense popularity has not stopped the negative press (Druckman & Bjork, 1991), this researcher, who was certified in the MBTI in 1993 by Otto Kroeger, has used the instrument in leadership and strategic planning consulting for decades. These experiences verified the MBTI's worth in providing personal awareness of individual preferences and appeared to assist in increasing collaboration skills.

Learning style inventories, especially in education, also became very popular in this era. As a college professor and management consultant, this researcher studied the Kolb Learning Style Inventory and used it successfully to increase her effectiveness with students and clients for decades. Kolb (1976) posed a four-quadrant model based on the research of experiential theorists representing active experimentation (AE) concrete experience (AE), reflective observation (RO), and abstract conceptualization (AC); by using the Kolb Learning Styles Inventory, participants could learn the patterns of their learning attributes by taking a short word association and mapping on a mathematical diagram. Gregorc (1979) outlined a phenomenological study of leaning styles that fundamentally added to the body of knowledge on cognitive styles as applied in education. His theory proposed a model with two axes: perception and ordering to identify learning styles relative to concrete abstract and sequential random. Gregorc (1982) expanded on the concept of these learning styles being an essential part of the overall system by stating that "these characteristics are integrally tied to deep psychological constructs" (p. 51). Contemporary scholars at the time criticized the work of Kolb and Gregorc because of their similarities to one another and the characteristics the MBTI (see Table 1).

Table 1

*Similarities Between MBTI and Gregorc's and Kolb's Approaches*

| Level | MBTI | Gregorc | Kolb |
|---|---|---|---|
| Perception | Sensing-Intuitive | Concrete abstract | Concrete abstract |
| Decision making | Thinking-Feeling | Sequential random | Convergent divergent |

*Note.* From "Cognitive styles in the context of modern psychology: Toward an integrated framework of cognitive style," by M. Kozhevnikov, (2007). *Psychological Bulletin, 133*(3), pp. 464-481, 471. Reprinted with permission.

Research on cognitive style had an interesting journey in the first 50 years after its conception and provided several theories, creating a rich body of knowledge that began in the experimental realm by building a strong foundation and then becoming applicable to the day-to-day actions of human development and insight into the ways that individuals process information and use it to shift their beliefs as they create their realities and interact with others while living their lives. In the last 20 years, research on cognitive style has experienced a unifying trend that set out to unite the various multiply dimensional theories and merge the complexities into a coherent systems model for practical use (Allinson & Hayes, 1996).

This trend was followed by an effort to integrate information-processing models and other concepts for the purpose of designing a stronger theoretical foundation by revisiting past theories and examining them in relationship to information-processing patterns, which shifted outcomes (J. A. Richardson & Turner, 2000). Next, neuroscience and cognitive science researchers examined visual-verbal variations (Kozhevnikov, Hegarty, & Mayer 2002; Kozhevnikov, Kosslyn, & Shephard, 2005) and spatial visualization concepts and transformations (Blajenkova, Kozhevnikov, & Motes, 2006). There also has been a continual expansion of research integrating the theories of the past with developing studies, including Ksiazkiewicz, Ludeke, and Krueger's (2016) exploration of the relationships among cognitive styles, genes, and political ideology. For the purpose of the current study, the decision-making style postulated by Kirton's A-I theory served as the theoretical framework to understand the cognitive preferences of

nonprofit board members in the process of executing their duties of problem solving and decision making to create high-performance outcomes.

## Theoretical Framework

The theoretical framework for this study on problem solving and decision making in HPOs was Kirton's A-I theory. In the late 1950s, Kirton, an English industrial psychologist specializing in organizational change, designed a management initiative to study the process of decision making in organizational interactions (Kirton, 1961). In his 1961 study, Kirton delineated three consistent and principle processes in organizations' change initiatives and defined them in terms of (a) lag times (time until implemented), (b) recalcitrant behaviors (resistance until significant event), and (c) organizational level (managers' most unpopular ideas). These observations also were noted in parallel from the works of Follett's (1924) power with/power over, Gulick's (1937) ommand/command authority, and Simon's (1947) rational forms, along with the work of Burns and Stalker (1961), who were the first to assert the relationship of innovation to management initiatives. Kirton's (1976) early work was instrumental in the association of adaption and innovation in relationship to cognitive style and the development of A-I theory.

Although his early work provided the foundation of A-I theory, Kirton's continual research, study, and application between 1976 and 2003 led to the development of the cognitive schema that further advanced his life's work. As a cognitive scientist, Kirton (2011) focused on how external stimuli were perceived, processed, and acted upon by individuals in organizations from a cognitive function perspective related to the three components of cognitive affect, cognitive effect, and cognitive resource. Cognitive affect

refers to what individuals want or need from the way they interpret information from the external stimuli and process it through their references of motivation. The relationship of motivation to opportunity is an essential determinant in the ways individuals process external stimuli (Kirton, 2011). In Kirton and de Ciantis (1994), the concept of cognitive effect was explained in terms of cognitive style and level in relationship to behavioral manifestation. This was helpful in defining coping skills as the required behaviors when individuals work outside their cognitive styles and to the degree of differential associated on the adaptive-innovative continuum (Kirton & McCarthy, 1988).

The assertion by Kirton (2000) that cognitive style and cognitive level are not correlated but are independent of one another is key to A-I theory. This difference in cognitive style and level becomes especially important when considering the integration of cognitive resource into the mix (Kirton & de Ciantis, 1986). Another important key to A-I theory was Kirton's (1999) consistency with Hume, Locke, and Berkley's acceptance (as cited in Ayer & Winch, 1952) of the belief that humans all start out with a clean slate, known as the Tabula Rosa theory, and that all learning is accomplished in a social structure with the need to learn and store survival information (Jones, 1999; Kirton, 2011; Searle, 1995).

In addition, Cloninger (1986) and van de Molen (1994) shared that the medically associated chemicals found in human beings support the thesis that cognitive styles are inherited, providing consistency with test-retest experiments proving that cognitive styles experience minimal variation throughout the life span (Kirton & Hammond, 1980). This consistency was foundational to the work of Previde (1984), who proposed that cognitive

style in relation to culture was quite possibly more of an intricate part of the human psyche (as cited in Kirton, 2000).

The addition of these findings led to further development of the A-I theory in relationship to the importance of problem-solving and decision-making style preferences related to individual understanding (Kirton, 2000). Therefore, it is possible that adaptors and innovators might have different cognitive preferences yet have similarities in their capacity for cognition. Referring back to the work of van de Molen (1994), research has even shown a comparability to Kirton's (2003) adaption-innovation theoretical foundation and differences in individual biological composition.

Kirton (1980) summarized individual differences in A-I theory:

> The adaption-innovation theory posits that both adaptors and innovators have their own characteristic strengths and weaknesses (including a tendency not to see each other's point of view) which are respectively useful and harmful to organizations. Both types are needed by organizations, if only to cover each other's weaknesses, but of the two, the adaptor has a privileged position since it is the adaptive mode that must prevail more consistently. (p. 214)

This information is important to frame the context of how A-I theory applies to individuals interacting within organizational constraints as they exert their problem-solving and decision-making efforts.

**Application of Kirton's A-I Theory**

As pointed out in the historical literature, A-I theory has been known as a decision-making style that has been highly correlated to personality styles and learning

styles within the practical application realm of cognitive style research (Kozhevnikov, 2007). In application, A-I theory provides individuals with a deeper understanding of themselves so that they can interact with one another more effectively and develop higher levels of mutual respect (Kirton, 2011). Although the construct of adaption and innovation has correlated with personality research, Kirton (2011) never claimed that A-I theory accounts for every situation.

As Goldsmith (1994b) pointed out, A-I theory is focused on how individuals solve problems and make decision in organizations, which helped to explain the outcomes of these differences and correlated with individual occupational choices in the overall population. For example, P. A. Holland, Bowskill, and Baily (1991) reported a preference of adaption in accountants, bankers, and secretaries, with marketing and finance professionals holding a preference for innovation. These differences in adaptors and innovators are described in Table 2. Individuals behave in an organizational context relative to problem definition, solution generation, policy implementation, organizational fit, potential creativity, collaboration, and perceived behavior (Foxall & Hackett, 1994).

Table 2

*Implications of High Adaptors and High Innovators*

| Implications | High adaptors | High innovators |
|---|---|---|
| For problem definition | Tend to accept the problem as defined with any generally agreed constraints. Early resolution of problems, limiting disruption and immediate increased efficiency are important considerations. | Tend to reject generally accepted perception of problems, and redefine them. Their view of the problem may be hard to get across. They seem less concerned with immediate efficiency, looking to possible long-term gains. |
| For solution generation | Adaptors generally generate a few novel, creative, relevant and acceptable solutions aimed at doing things "better." | Innovators produce numerous ideas that may not appear relevant or be acceptable to others. Such a pool often contains solutions that result in "doing things differently." |

Table 2 Cont'd

| Implications | High adaptors | High innovators |
|---|---|---|
| For policies | Prefer well-established, structured situation. Best at incorporating new data or events into existing structure of policies. | Prefer unstructured situations. Use new data as opportunities to set new structures or policies accepting the greater attendant risk. |
| For organizational "fit" | Essential for the ongoing functions, but in times of unexpected changes may have some difficulty moving out of their established role. | Essential in times of change or crisis, but may have trouble applying themselves to ongoing organizational demands. |
| For potential creativity | The Kirton Inventory is a measure of style but not level or capacity of creative problem solving. Adaptors and innovators are both capable of generating original, creative solutions, but which reflect their different overall approaches to problem solving. | The Kirton Inventory is a measure of style but not level or capacity of creative problem solving. Adaptors and innovators are both capable of generating original, creative solutions, but which reflect their different overall approaches to problem solving. |
| For collaboration | Adaptors and innovators do not readily get on, especially if they are extreme scores. Middle scorers have the disadvantage that they do not easily reach the heights of adaption or innovation as do extreme scorers. This conversely can be advantageous. Where their score is immediate between more extreme scorers, they can more easily be "bridges," getting the best (if skillful) out of clashing more extreme scorers and helping them to form a consensus. | Adaptors and innovators do not readily get on, especially if they are extreme scores. Middle scorers have the disadvantage that they do not easily reach the heights of adaption or innovation as do extreme scorers. This conversely can be advantageous. Where their score is immediate between more extreme scorers, they can more easily be "bridges," getting the best (if skillful) out of clashing more extreme scorers and helping them to form a consensus. |
| For perceived behavior | Seen by innovators as sound, conforming, safe, predictable, inflexible, wedded to the system, intolerant of ambiguity. | Seen by adaptors as unsound, impractical, risky, abrasive, threatening the established system and creating dissonance. |

*Note.* From "Styles of managerial creativity: A comparison of adaption-innovation in the United Kingdom, Australia, and the United States," by G. R. Foxall & P. M. Hackett, (1994), *British Journal of Management, 5,* pp. 85-100, p. 86. (M. J. Kirton, 1985, Reproduced with permission). Reprinted with permission.

It is important to remember that these differences in cognitive style are inherited by individuals and that "the adaption-innovation theory is founded on the assumption the all people solve problems and are creative" (Kirton, 2011, p. 4). For example, Kaufman (2004) found that adaptors prefer making organizational improvement within a current structure; rely on more structure during problem solving (Buffington, Jablokow, & Martin, 2002); and focus on solutions that reflect the most agreed upon paradigms, which tend to be more palatable and accepted from an organizational culture perspective

(Kirton, 1984). In contrast, innovators seem to focus on overhauling the complete workplace (Kwang et al., 2005); are less apt to consider current system or structure (Jablokow & Booth, 2006); and tend to show general disregard for accepted norms when focused on goals (Kirton, 1984). Stum (2009) summed it up by stating, "KAI is a theory that can provide a balanced view of the value of the cognitive styles of each person. Effective, long-term change is most likely when both adaptors and innovators are allowed to influence the process" (p. 74).

In the past 40 years, numerous studies have been conducted to apply A-I theory and prove its usefulness to individuals and the organizational process. Table 3 offers a chronological list of researchers who have studied the application of A-I theory with a broad array of participants and who have all added to the essential body of knowledge validating the use of A-I theory in cognitive style studies.

Table 3

*Empirical Research Using A-I Theory*

| Year | Author | Subject |
|---|---|---|
| 1984 | Goldsmith | Personality characteristics |
| 1989 | W. G. K. Taylor | KAI: re-examination of inventory factor structure |
| 1991 | Jabri | Educational and psychological measurement: modes of problem solving |
| 1993 | Butter & Gryskiewicz | Entrepreneur's problem-solving styles: Empirical study using KAI |
| 1993 | Woodman, Sawyer, & Griffin | A theory of organizational creativity |
| 1994 | Foxall & Hackett | Styles of managerial creativity: KAI comparison of United Kingdom, Australia, and United States |
| 1995 | Tullet | KAI cognitive styles of male and female project managers |
| 1996 | Mudd | KAI Inventory: evidence of style/level factor composition issues |
| 1998 | Kubes | KAI in Slovakia: cognitive styles and social culture |
| 1999 | Shiomi | Cross-culture response styles and KAI |
| 2000 | Chan | KAI Inventory using multiple-group mean and covariance structure analysis |
| 2002 | Buffington et al. | Entrepreneurs' problem-solving styles: empirical study using KAI |
| 2003 | Skinner & Drake | Behavioral implications of KAI |
| 2004 | Kaufmann | Two kinds of creativity |
| 2005 | Kwang et al. | Values of adaptors and innovators |
| 2005 | Meneely & Portillo | Personality, cognitive style, and creative performance |
| 2005 | Schilling | Network mode of cognitive insight |
| 2007 | Hutchinson &Skinner | Self-awareness and cognitive style: KAI, self-monitoring, and self-consciousness |

*Note.* Modified from "Kirton's Adaption-Innovation theory: Managing cognitive styles in times of diversity and change," by J. Stum, (2009). *Emerging Leadership Journeys*, *2(1),* 66-78, p. 70. Reprinted with permission.

The scholarly work of these aforementioned and other researchers has added to cognitive style research not only in the field of psychology but also management, engineering, medical science, and business. Kirton (2011) noted an interesting shift in past literature that valued adaptive behaviors with higher regard for the behaviors of innovation, with current literature appearing to favor the behaviors of innovation over those of adaption, instead. However, Kirton maintained that literature needs to balance the styles because neither style is better than the other; rather, the importance lies in recognizing the value of each individual's problem-solving capability.

**Management of the Cognitive Gap**

As cited in Stum (2009), Jablokow and Booth (2006) defined the concept of the cognitive gap as "(a) the difference between difficulty of a specific problem and the cognitive ability of the problem solvers seeking the solution, and (b) the difference between the cognitive styles of the problem solvers themselves" (p. 71). Kirton (2011) related cognitive gap to how comfortable individuals are within an organizational change context. Kirton found a relationship to how comfortable individuals were with depending on the situation the change projects, namely, the closer alignment the change was to their paradigm, the easier was the acceptance. For example, Jablokow and Booth conducted a study by placing adaptors in stable system maintenance roles and assigning innovators to marketing and TQM positions, which increased individual productivity and organizational effectiveness. Jablokow and Booth supported "the proposition that engineering managers and team leaders can learn to mentor individuals and tailor work assignments based on problem solving levels and styles, leading to improved performance overall" (p. 330).

Buffington et al. (2002) explored the concept of cognitive gap in relationship to team dynamics while acknowledging the value of cognitive gaps, with results related to relevance, conflict, and conformity and consensus. First, understanding differences in cognitive gaps provided adaptors with the opportunity to look at the work of the innovators with relevance, adding value to collective problem solving. Second, although conflict was common among adaptors and innovators, the better they understood each other, the less conflict existed. Third, the adaptive individuals focused on conformity;

however, when coupled with a deeper understanding of cognitive styles, they provided more group consensus (Buffington et al., 2002). Cognitive gap is associated with KAI Inventory scores in relationship to 20-point differentials, which require individual coping skills to experience the conflict benefits observed by the studies cited (Kirton, 2003).

Goldsmith (1985) stated:

> The distinctions highlighted by the A-I theory and measured by the KAI Inventory are the manifestation, at least in part, of deeper underlying differences in personality, that broad predispositions to behavior which shape many aspects of human life also interrelate to form the problem-solving patterns termed "adaptive" and "innovative," and that these correlations may be measured validly and reliably via the KAI. (p. 54)

## The KAI Inventory

The KAI Inventory assesses cognition through cognitive style measurements in relationship to changes in the spheres of problem solving, decision making, and human creativity (Kirton, 1976, 1977). This psychometric inventory was designed over the next several years after its conception in 1961, when Kirton engaged in observations of management initiative. Kirton (2011) pointed on that the instrument is referred to as an inventory because of the resistance to calling it a test (too misleading or threatening) or a survey (too trivial). The KAI Inventory began as a pencil- and-paper, carbon-backed duplication form, which made it easy to score; it consisted of 33 statements and a 5-point Likert response scale with scores on 32 items (first question is used as a control question) that provided 160 points with a 96-theoretical mean (Kirton, 1976). Kirton's (2011)

scholarly work underwent several test-retest iterations ($M$ = 95.33) and was tested in numerous languages and cultures as well as on large populations ($M$ = 95, male-98, women-91, practical range of scores 45-145) with a standard deviation of 18 (Kirton, 1985).

Because the KAI Inventory was initially scored across the 32 items, it was treated as a unidimensional construct in the earliest studies. Kirton (1976) designed three interconnected elements of cognitive style into the inventory as he established the theory. However, some researchers challenged this thinking, seemingly unaware that Kirton was including these three elements as core parts of cognitive style and that even though these three elements were distinct, they also were highly, positively inter-correlated. These three parts of cognitive style within the KAI, that is, Approach to Efficiency (AE), Rule Governance (RG), and Sufficiency of Originality (SO), added to accuracy and were supported through definition by other scholars (Bagozzi & Foxall, 1995; W. G. K. Taylor, 1989; Yin & Tuttle, 2012). The AE dimension purports adaptors' preference for small steps toward a goal; in contrast, innovators' preference eludes attention to detail (C. R. Rogers, 1959; Yin & Tuttle, 2012). Next, the RG dimension distinguishes between adaptors' need to align with accepted social structures and innovators' disregard for current system principles and customs (Goldsmith, 1985; Merton, 1957; Yin & Tuttle, 2012). Finally, the SO dimension relates to solution generation, with adaptors preferring a few implementable options and innovators offering numerous possibilities, although perhaps some impractical (Weber, 1946; Yin & Tuttle, 2012).

Jablokow (2005) held that the evidence showed that the KAI Inventory maintained a high level of validity and reliability throughout the wide variety and number of times the instrument was tested. Several researchers have conducted studies to correlate the KAI Inventory with other personality instruments (Goldsmith, 1985; Goldsmith & Matherly, 1986; Hammond, 1986; Mulligan & Martin, 1980). In all the studies and tests cited, there has not been the slightest record of any problems related to the administration of the KAI Inventory (Kirton, 2011).

Since Kirton's (1999) initial efforts with its conception, the KAI Inventory has been the topic of more than 100 dissertations and 300 journal articles and passages in scholarly books. Kirton turned to the factor analysis to explain the inventory's strong validity because of the correlation in relationship to the scholarly labors of "Merton (1957), C. R. Rogers (1959), and Weber (1946)," which provided the foundation of the origins of the A-I theory, "if not the genesis of the idea" (p. 30).

## History of Problem-Solving and Decision-Making Research

Problem-solving and decision-making research had its roots in cognitive psychology in the late 1970s, when the practical associations to decision-making styles, personality styles, and learning styles moved into the forefront (Kozhevnikov, 2007). Funke (2001) argued that it is essential for individuals to acquire knowledge and be able to apply it to solve complex problems and make sophisticated decisions. Funke also pointed out the importance of the circumstances of the times when examining problem solving and decision making, such as in the differences of today's fast-paced world and global technology innovations. Fischer, Greiff, and Funke1 (2012) stated that problem-

solving research has evolved over the years by focusing on "interviewing experts of certain knowledge domains, on studying the effects of expertise on problem solving activities and decision making, or on simulating complex problems based on real systems humans could have to deal with in their daily lives" (p. 20).

Newell and Simon (1972) developed the theory of human problem solving, which although not focused on complexity, had several key aspects that maintained its grounding. First, they defined problem space as the relationship between the internal association to the external definition of the problem in consideration to the problem solver's intelligence and/or expertise. Second, the theory distinguished between how the problem was represented and the method used to orient the goal through algorithms representing general searches and more specific domain searches. Third, the theory proposed that although organizational change relates to the process and that situations, consequences, and changes in the environment can all affect the outcomes, other methods are available, any method can be abundant at any time, and problem statements can be rewritten and new solutions proposed. The possibilities were real and needed to be considered for all variables (Newell & Simon, 1972).

Problem-solving and decision-making research has provided a rich array of knowledge and cognitive associations for the last several decades and has been specifically useful for highlighting parallels among decision-making styles, personality styles, and learning styles (Kozhevnikov, 2007). Added to high interest in the field of education, a systematic literature review conducted by Armstrong, Cools, and Sadler-Smith (2012) from the early 1970s until 2009 revealed 4,569 documents focused on the

relationships to cognitive styles in management, business, and organizational psychology. According to Kozhevenikov, Evans, and Kosslyn (2014), by the late 1970s, the literature supported an increased interest in individual cognitive styles or decision-making styles and group behavioral influences in the workplace. Specifically, Michael Kirton "was the first to consider decision- making styles by introducing the adaptor/innovator dimension ("doing things better" vs. "doing things differ- ently"; Kozhevenikov et al., 2014, p. 13). For this study, it was important to define problem solving and decision making in relation to studies that had tested A-I theory and the KAI Inventory in various environments.

**Definition of Problem Solving**

Human creativity was a central theme of this study because it represented the underlying association to the A-I theory, which purports that all individuals are creative and solve problems using cognitive styles (Kirton, 2011). This thesis has been mentioned in numerous studies throughout the literature, with findings showing that whenever more than one problem solver is involved, differences in cognitive style cause variance (level of IQ, motivation) that require appropriate management to ensure maintenance of the quality of decision outcomes (Jablokow, 2008; Kirton, 2011).

In addition, differentials in problem-solving styles can impede progress if not understood and managed effectively. These differentials are recognized in A-I theory extremes on a continuum of high adaption to high innovation, establishing a normal curve displaying individuals who either have a need for structure (adaption) or those who prefer to work outside of the structure (innovation) when engaged in problem solving (Kirton, 1976). These differences are further defined by the need of high adaptors to solve

problems within current rules, beliefs, and structures, creating the perception that they are reliable and predictable, characteristics leading innovators to define adaptors as "boring" (Kirton, 1978, 2011). This dynamic is in contrast to the disregard of high innovators for conventional rules, beliefs, and structures, thus creating the perception of unpredictability and unreliability, characteristics that lead adaptors to consider innovators as dangerous, depending on the differential in KAI Inventory scores (Kirton, 1978).

There has been some controversy with the definition of innovation, with Kirton (2011) criticizing what he described as an "innovation bias" (p. 259) because innovation was seen as better than an adaptive approach to problem solving, which went against A-I theory's stated equality between adaption and innovation, meaning that although they are different, both are needed for effective solutions. For example, even though Kirton (1976) proposed that broad definitions of innovation, as in E. M. Rogers's (2003) statement that "an innovation is an idea, practice, or object that is perceived as new by an individual or other unit of adoption" (p. 12), were more applicable to the definition of change, Kirton's definition of innovation centered around the preferences of individuals to approach things differently and create change outside of established systems. Table 4 displays specific differences in the characteristic of adaptors and innovators in relationship to problem solving.

Table 4

*High Adaptors and High Innovators in Relationship to Problem Solving*

| High adaptors in response to problem solving | High innovators in response to problem solving |
|---|---|
| Characterized by precision reliability, conformity, mechanicalness, prudence. | Are seen as undisciplined, thinking tangentially, approaching tasks form unsuspected angles. |
| Seek solutions to problems in tried and understood ways. | Often query the problem's basic assumptions; manipulates problems. |
| Reduce problems by improvement and greater efficiency, maintaining continuity, stability, and group cohesion. | Are catalyst to settled groups, irreverent of their consensual views; is seen as abrasive, creating dissonance. |
| Challenge rules rarely, cautiously, usually when supported. | Often challenge rules, past customs, consensual views. |
| Produce a (manageable) few relevant sound safe ideas for prompt implementation. | Produce many ideas including those seen as irrelevant, unsound, risky. |

*Note.* From "Adaptors and innovators: Styles of creativity and problem solving," M. Kirton, (1989; 2000), London, UK: Routledge, Table 1, p. 10. © m.j.kirton. Printed with permission.

**Definition of Decision Making**

In the last 80 years, decision making has undergone a democratization, which has been a shift from Barnard's (1938) paradigm of decision making being conducted exclusively at the executive level to a more collective group or team decision-making approach (Devine, Clayton, Philips, Dunford, & Melner, 1999). Devine (1999) posed an essential RQ: "Do groups of experts with diverse backgrounds make decisions that reflect the sum of their collective knowledge?" (p. 608). In their conclusions, Devine et al. (1999) resolved that teams function nonhierarchically, have appointed leaders, multitask, and engage in consensus during decision-making processes. Kirton (2011) aligned with Devine's assertion that conflict, if managed appropriately, could be a positive attribute to team dynamics. In contrast, Janis (1972) hypothesized that groups that become overly cohesive, perhaps focus too much on cohesion, and miss the mark on their mission, coined *groupthink*.

Devine (1999) defined conflict as differences in group goal discussions and decisions and termed it *affective conflict*. Kirton (2011) agreed and added the importance of level and style to the cognitive interactions, referring to the dynamic as cognitive affect. Kirton verified that personal beliefs and values are deeply ingrained and easily changed at the core of cognitive affect. Devine ascertained that cognitive conflict is strategic in nature and proposed that its effect assists in collective information sharing and improving the quality of group decision making and that cognitive affect is detrimental to decision making. This assertion aligned with Weber's (1946) argument that emotions obscure effective decision making.

Although at a primary individual level there does not appear to be a clear cognitive difference in problem solving and decision making, this cognitive difference changes when group decision making and problem solving are introduced. Kirton (2011) described the dynamic of "Problem A, which relates to the reason two or more people collaborate, and Problem B, which relates to how individuals deal with their different cognitive levels and styles (cognitive gap)" (pp. 32-33) and the coping skills they employ to resolve conflict and provide their best in the problem-solving and decision-making processes that will create organizational excellence.

## Historical View of Organizational Excellence

The history of organizational excellence can be traced back to the 1920s, when statistics were first used to measure production outcomes (Shewhart, 1931). As reported by Franke and Kaul (1978), between 1927 and 1932, Elton Mayo conducted the Hawthorne studies, named after a plant of the Western Electric Company where

researchers changed lighting levels, workday lengths, and breaks to determine maximum efficiencies and production. Franke and Kaul found that increases and decreases in lighting levels raised the productivity in the workers; this phenomenon was coined the *Hawthorne effect* and showed that productivity increased when workers were engaged in the design of work processes and decision making for managing improvements. Another member of this famous Hawthorne study team was Walter Shewhart, who later became known as the grandfather of TQM because of the statistical process control tools he developed and used in his work and teaching positions (Shewhart, 1931, 1939).

By the late 1940s, Deming (1986), Feigenbaum (1991), and Juran (1995) began the processes that revolutionized the world's paradigm of how to statistical measure organizational processes and shift the global standard of excellence. Deming and Juran taught organizational quality to the Japanese after WWII, transforming the country's economic endeavors. In 1968, through the leadership of Dr. Kaoru Ishikawa, the Japanese called it Total Quality Control (TQC; Deming, 1993; Ishikawa, 1989). By the 1980s, the secret of the Japanese became known worldwide, starting the TQM revolution that occupied industry for the next several decades (Deming, 1993). The U.S. Navy called its quality efforts total quality leadership (TQL) and trained personnel in the benefits of Deming's (1993) 14 points, Juran's quality control, and Lean Six Sigma to measure effectiveness more effectively (Houston & Dockstader, 1993).

Unfortunately, for many organizations, the 21st century witnessed the pendulum swing back to historical views of how performance was measured, namely, through financial indicators. Hoque and James (2000) believed in financial metrics to evaluate

return-on-investment sales margins, capitalization, quality of products, and customer service. Hoque (2004) tailored Govindarajan's (1984) test instrument to assess organizational performance through 12 characteristics, all of which, except personnel development and customer service, were related to financials. Evans (2011) looked to the Baldrige Criteria for Performance Excellence (National Institute of Standards and Technology, 2015) to examine the relationship among the categories of customer satisfaction, market share, and financial performance. Examining these themes in a 5-year study, de Waal (2008) formulated this definition: "An [HPO] is an organization that achieves financial and non-financial results that are better than those of its peer group over a period of time of at least five to ten years*"* (p. 2).

Devinney, Richard, Yip, and Johnson (2005) chose to define organizational performance (DV) through the three primary approaches used to measure it: a single measure, different measures through an independent comparison of the same variables, and different measures by aggregating through a DV. Combs, Crook, Shook, and Ketchen (2005) shifted this paradigm with their assertion that financial and operational performances are distinct; they assigned the categories of growth measures, stock market, and accounting returns as financial measurements. Combs et al. further advised against combining financial and operational performances to measure organizational performance. However, empirical evidence has linked financial and nonfinancial measurements in the process of successfully assisting organizations in improvement efforts to achieve organizational excellence (Richard, Devinney, Yip, & Johnson, 2009).

Peters and Waterman (1982) first proposed the need for excellence in organizations when they went in search of excellence and published their findings in the McKinsey 7-element model, which has been used for decades to analyze the organizational effectiveness of numerous companies worldwide. Therefore, once Peters (2001) admitted to the flaw in the original thinking about organizational excellence, specifically, that the initial elements would remain the same over time, numerous frameworks for organizational excellence emerged. In fact, Parks and Hilvert (2016) provided a current framework for organizational excellence that sported eight strategies to achieve excellence and stated that "organizations that perform deliberate work that simultaneously considers the needs of its customers, along with vision and values, employee engagement and competency, performance measurement, and managing the change that inevitably comes from this work" will achieve excellence (p. 1).

Parks and Hilvert (2016) provided the positive outcomes expected from their framework:

- Vision and strategies are cascaded throughout the organization and guide all work, actions, and decisions.
- Core values drive behaviors, with the goal of achieving the desired organizational culture.
- The organization's measures facilitate effective and confident decision making and contribute to higher performance.

- The organization retains its "All Stars," and they feel valued and equipped for excellence, bringing energy, commitment, and their "whole self" to the workplace.
- Residents and other stakeholders feel they receive excellent services delivered with a positive experience.
- The organization's reputation—service delivery, attraction and retention of great people and talent, bond rating, and financial performance—is solid and enduring. (p. 2)

For Parks and Hilvert, the key to success is for organizations to use a holistic approach to ensure excellence.

## Importance of Studying Nonprofit Boards

The study of good governance on nonprofit boards has presented many challenges over the years, particularly in the 21st century. Chait, Ryan, and Taylor (2005) discussed many of the scandals that have left the names and missions of nonprofit boards splashed across the front pages and top stories of national headline news. Society and governmental policy expect that nonprofit board members take their roles and responsibilities seriously and execute their duties in difficult environments through the scrutiny of regulators, shareholders, members of the public, and the fast-moving multimedia representative of today (Gazley & Bowers, 2013). The challenge begins with understanding the difference between boards that are competent and meet all of their legal responsibilities and boards that are high functioning with high proficiency. Herman and Renz (2008) proposed that research provide evidence that nonprofit boards influence

nonprofit organizations in positive ways; however, that same research has failed to explain how boards get it done.

Research in the 1990s focused on governance from the perspective of how efficient boards were in relation to how they executed their roles and responsibilities. Initial thoughts purported that the role of the CEO overshadowed the board and was therefore responsible for the outcomes, be they successes or failures (Heimovics & Herman, 1990). Bradshaw, Murray, and Wolpin (1992) reported that the more proactive a board was, the more of a positive effect it had on nonprofit organizational performance and that the more structured a board was, the more limited yet higher effect it had on performance in the functions of measurement, budgetary increases, and ways to avert deficits. Inglis (1997) found that individual and board contributions related to roles and responsibilities and were different based on gender, noting that females tended to view planning, mission, and executive director roles as more significant than their male counterparts did.

Research in the 2000s continued by showing that individual contributions through their roles and responsibilities and the levels of board participation contrasted depending on the type of organization (Iecovich, 2004). Preston and Brown (2004) explored the relationship of the performance of board members to their levels of commitment. Results showed positive correlations in the number of hours that members donated and their perceptions of the leaders' participation and a positive correlation between leaders' assessments of value and participation with self-reported member involvement (Preston & Brown, 2004). Parker (2007) found that "the use of structured agendas and managed

meetings impacts the success of the meetings" (p. 931) and that humor and informality are key to the development and maintenance of board relationships.

The importance of studying nonprofit boards through prior literature stems from the necessity to learn how most effective boards addressed the challenges of the future. Gazley and Bowers (2013) summarized this important endeavor by sharing the following characteristics of strong nonprofit boards:

1. High-performance nonprofit boards are "learning organization" and focus on processes on "how decisions are made," while implementing member development and management programs. In particular, understanding "that whatever size, composition, and decision-making structure they choose, structure is ultimately less important than the means by which they facilitate effective decisions as a governance body" (p. 9).
2. T. Holland and Jackson (1998) found that high-performing boards take responsibility for the outcomes of their collaborative skills and for the assessment of their collective performance and the performance of their organizations. Furthermore, findings proposed high-performance boards model the behaviors members, staff, and stakeholders to enhance the dynamics of the board and build healthy relationships between themselves, with internal entities, and external customers and suppliers.
3. High-performance boards read and apply the findings and advice from the rich literature available on good governance (Herman & Renz, 1999). "Empirically, researchers have found that good governance practices really do

> matter for boards, although whether good organizations foster good boards or good boards build stronger organizations is not always clear" (p. 9).

Gazley and Bowers were instrumental in testing the historical evidence of past theories and reporting the findings on what makes high-performance boards of today. In so doing, the researchers showed that although the high-performance boards of today might not have all the answers, they distinguish themselves by a strong willingness "to invest in learning" what is needed to succeed making the journey as important as the destination (p. 102).

**Definition of High-Performance Boards**

Gazley and Bowers's (2013) ASAE electronic survey set out to define high-performing nonprofit boards with the purpose of examining the dominate conventional wisdom associated with the good governance of associations and organizations with members who pay dues and offering solutions for improved performance, not just anecdotal evidence. Unlike charitable organizations that have been the subject of much research, associations and organizations with member who pay dues have not been studied nearly as much (Gazley & Bowers, 2013). This ASAE electronic survey exceeded its goals by addressing essential nonprofit board issues through the administration of a 15-minute survey completed by 1,585 nonprofit CEOs between November 1012 and February 2013 (Gazley & Bowers, 2013). The criteria for inclusion were board members who served on boards that filed their own Internal Revenue Service 990 form, received revenue from some members, were based in the United States, and employed paid staff members. The survey had a 12% response rate and provided performance data on

governance; organizational environment; board structure, selection, and procedures; relationships with staff, members, chapters, and stakeholders; board development and self-assessment practices; and CEO assessment of board performance. Data collected from the ASAE survey were reported in perceptual percentages and provided a broad array of generalizable findings to offer nonprofit boards' solutions to increase performance.

Gazley and Bowers (2013) proposed a systems view of nonprofit organizations, that is, a diagram displaying a comprehensive list of unique activities performed and the diverse environments involved (see Figure 1). This diagram represents the relationships among organizational characteristics, the related intermediate outcomes achieved by board activities, and the results of the work as performance outcomes from CEO assessments of board performance (Gazley & Bowers, 2013). This systems view displays the current approach that researchers believe best evaluates good governance because of its comprehensive nature to all of the elements related to organizational development and the uniqueness of each board's environment (Cornforth, 2011; Miller-Milleson, 2003; Ostrower & Stone, 2010).

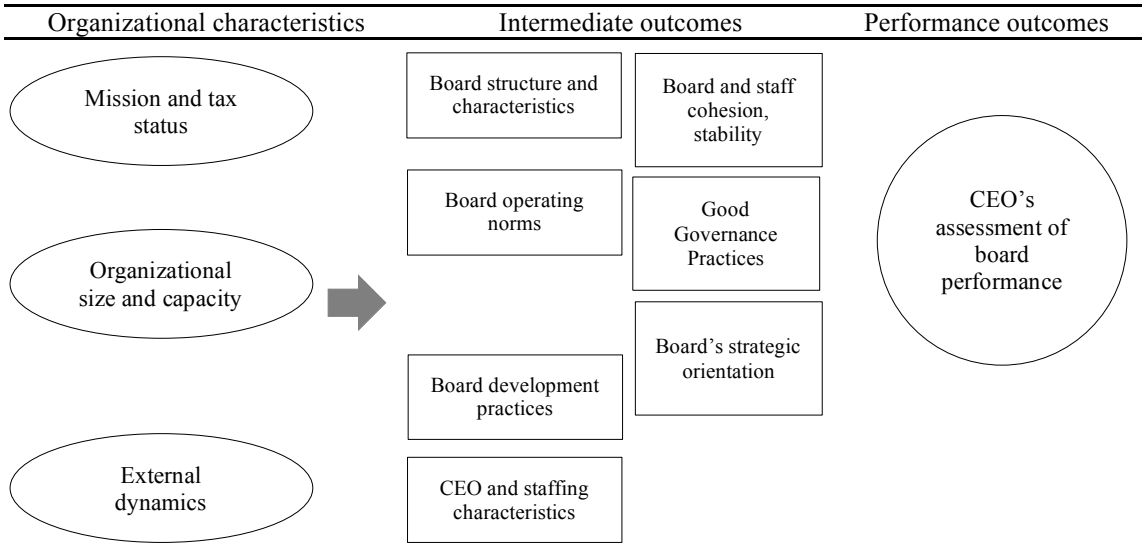


*Figure 1.* A systems view of boards.
*Note.* From "What makes high-performing boards: Effective governance practices in member-serving organizations," by B. Gazley and A. Bowers, 2013, ASAE Association Management Press, Washington, DC, p. 12. Reprinted with permission.

**Validity and Reliability**

According to Gazley and Bowers (2013), the validity and reliability of the ASAE survey were ensured by the commitment and expertise of the members of the ASAE Foundation's Governance Task Force and the Indiana University Center for Research with the oversight of Indiana University's Institutional Review Board (IRB). The two sources used for the sample comprised 3,867 members of ASAE, including CEOs, and 9,524 non-ASAE members randomly selected and stratified from a database of 21,326 organizations. The researchers employed cognitive interviews and a pretest to increase reliability, and they provided the CEOs with five reminder and introductory e-mails, immediate access to data, and summary results after the study was published. Further support for reliability and validity came from the random sampling of non-ASAE organizations with characteristics based on "tax status, expenditures, census region, and

National Taxonomy of Exempt Entities (NTEE) professional association classification," with generalized results to similar boards at a 2% to 3% error margin (Gazley & Bowers, 2013, p. 104).

**Operating Norms and Decision Making**

Gazley and Bowers (2013) studied the operating norms of nonprofit boards from the perspectives of how many board meetings were held, reason for the meetings, how the board used time during the meetings, and how a strategic focus was achieved in the meetings. The Panel on the Nonprofit Sector (2007 reported that depending on a board's mission, if it had a strong committee composition, even one meeting per year could suffice. Results showed a mean of four meetings per year and a median of four, with 36% of the boards reporting three to four meetings per year (as cited in Gazley & Bowers, 2013). These statistics shifted when the 46% of boards that stated they combined electronic meetings and face-to-face meetings, reported that they had a median increased to seven meetings per year (as cited in Gazley & Bowers, 2013).

The majority of respondents in Gazley and Bowers's (2013) study concurred that the requirement for an annual meeting was the primary reason for holding a meeting, as well as when there was a requirement for a vote, even though results showed that 64% of boards always or nearly always voted unanimously. Getting the work done was another challenge that all boards faced. Other than CEOs and staff, some boards used board presidents, officers, standing and ad hoc committees, and specific task forces; unfortunately, dissatisfaction with the engagement of the boards was shared by several CEOs (Gazley & Bowers, 2013). More than two thirds of nonprofit boards were spending

the majority of their meeting time being briefed on information from staff, committee results, financial and program oversight, and policy reviews. Each of the information sharing endeavors consumed approximately one quarter of the board's time (Gazley & Bowers, 2013).

The Panel on the Nonprofit Sector (2007) reported that the most concerning issues about nonprofit board time management were the "monitoring/evaluating the CEO and other staff who report directly to the board" and boards spending "very little time discussing their own goals and performance," of which more than 29% do not engage it at all (as cited in Gazley & Bowers, 2013, p. 59). In addition, a key element of Carver's (1997) policy governance model highlighted a board's ability to focus on strategic issues and not get distracted by operational actions or bogged down in day-to-day task orientation as core to a board's success. The Panel on the Nonprofit Sector clearly stated, "The board should establish and review regularly the organization's mission and goals" (as cited in Gazley & Bowers, 2013, p. 3). Table 5 displays alignment with this statement by showing that over 50% of the boards spent at least 25% of their time on strategic issues and decision making and 68% worked jointly with staff to develop and approve their strategic plans (Gazley & Bowers, 2013).

Table 5

*Level of Organizational Strategic Activity*

| What process best describes how strategic planning is carried out in your organization? Please choose the single best answer. | |
|---|---|
| At present, we do not have a strategic plan | 13% |
| Staff develops the plan, which the board and/or membership approves | 12% |
| Staff and board work jointly to develop strategic plan | 68% |
| Board develops and approves strategic plan on its own | 7% |
| Total | 100% |

*Note.* From "What makes high-performing boards: Effective governance practices in member-serving organizations," by B. Gazley and A. Bowers, 2013, ASAE Association Management Press, Washington, DC, p. 60. Reprinted with permission.

Gazley and Bowers (2013) also examined the ways in which decisions were made on nonprofit boards, posting a key finding that "CEOs value the deliberative board processes that can support consensus-based decision making" (p. 51). However, the statistics painted a picture of a stronger reliance on formal processes, with 68% of boards stating that it was very important to define board decision making with formal tools to include Robert's Rules of Order (Robert & Robert, 2011); Tecker's knowledge-based decision-making process (Tecker, Franckel, & Meyer, 2002); Carver's (1997) policy governance model; and the American Institute of Parliamentarians Standard Code of Parliamentary Procedures (Sturgis & American Institute of Parliamentarians, 1993). Although Robert's Rules of Order was the most preferred tool, it had a response rate of 23% stating very important, 29% stating fairly important, and the remaining 48% stating little to no value in their boards' decision-making processes (Gazley & Bowers, 2013).

Informal decision-making options received mixed reviews, with one quarter of the respondents answering that they held little to no value in processes such as the "thumbs up, down, or sideways" or other straw poll and "sunshine rules" applications. The

remaining respondents expressed only a fairly important value to informal decision making. Deliberative processes, when effectively facilitated, got high marks, with three quarters of the participants giving high levels of importance to dialogues, deliberations, and premeeting preparation so that the members could make informed decisions (Gazley & Bowers, 2013). One respondent stated, "A strong board chair and CEO makes a big difference in how time and the agenda are managed the meetings. The critical thing is the partnership/relationship of the chair and CEO" (Gazley & Bowers, 2013, p. 55).

**Assessment of Nonprofit Board Performance**

The BoardSource/ASAE Board Self-Assessment for Associations is a structured process that starts with a board's voluntary acknowledgment that a formal assessment tool provides the environment for board members to assess the roles, responsibilities, and commitment of other board members. The assessment tool also allows board members to perform a self-assessment of the members, executive directors, and CEOs engaged in performing the duties necessary to improve the achievement of goals and the quality of performance outcomes. Dignam and Tenuta (2015) focused on the importance of good governance starting at the board level and the work required to ensure that boards function as a strategy resource. This requirement was reiterated in a Harvard Law School blog identifying six responsibilities of boards aspiring to excellence in board governance (Rosenthal, 2012):

- Formulate key corporate policies and strategic goals.
- Authorize major transactions or other actions.
- Oversee matters critical to the health of the operation.

- Evaluate and help manage risk.
- Steward the resources of the organization in the long run.
- Mentor senior management by providing resources, advice, and introductions to help facilitate operations.

Rosenthal (2012) pointed out that board members do not necessarily do these things themselves; rather, they guide, mentor, and coach to ensure good management for a board to meet obligations and reach its goals and mission. Dignam and Tenuta (2015) piggybacked on Rosenthal's acknowledgment of a board's "decision-making powers regarding matters of policy, direction, strategy, and governance of the organization" and that nonprofit and for-profit boards have similar decision-making power, that ends "where shareholder interest in maximizing returns gives way to mission fulfillment, a multiplicity of stakeholders, more complex business models, and self-accountability rather than external accountability" (p. 1).

It was this logic of the powers of decision making and the fact that if the literature was replete with advice for boards to engage in improvement assessments to increase their performance, then they would do so. In addition, if the majority of board members stated a desire for feedback, then designing a tool to do so and studying its effect over time on the boards that made the investment a worthwhile undertaking for the BoardSource/ASAE partnership (BoardSource, 2012; Dignam & Tenuta, 2015). The revised BoardSource tool focused on the foundational elements to help boards to know how well they were functioning and where they could invest for improvement. The key for the current study was that two of those foundational elements were problem solving

and decision making. Therefore, the categorical data collected through the BoardSource/ASAE Board Self-Assessment for Associations survey questions, analysis, and findings were instrumental in the correlation of the A-I theory to problem solving and decision making.

## Significance of Cognitive Style in Organizational Excellence

The significance of cognitive style in organizational excellence has been the topic of several studies using Kirton's A-I theory and KAI Inventory to understand the inner dynamics of how individuals respond to external stimuli and process information to achieve high levels of organizational performance (Kirton, 2011). To ensure that organizations take the time to develop their people and create an environment for them to build a holistic strategy for excellence, it is important to understand the cognitive approaches organizational members use to process information, solve problems, and make decisions (Parks & Hilvert, 2016). This understanding of individual cognitive preferences has been evidenced in organizational change research, which has reported the most common thread as resistance to change (Burns & Stalker, 1961; Kaufmann, 2004).

Kirton (2011) was very specific about not labeling someone as "resistant to change" because of a lack of agreement with a specific proposed position on an improvement idea. Kirton (2011) believed that no one person dislikes all ideas for change and that at the same time, no one person likes all ideas for change. In fact, A-I theory has avoided separating and labeling individuals as members of in-groups or out-groups for educational exercises, nor should this be practiced in practicality (Kirton 1978, 2011). Drucker (1969) offered observations on this dynamic with the belief that most people in

bureaucratic organizations align problem solving and decision making within acceptable norms and that others have the "courage to do things differently" (p. 50).

Kirton (2011) used Drucker's (1969) reflections to help to explain the significance of the application of A-I cognitive styles and the extent of the differences in problem-solving and decision-making approaches required in successful change management initiatives. This reflection aligned with Kirton's (1978) hypotheses that adaptive problem-solving styles prefer solutions with prevailing structures and innovative problem-solving styles prefer to look outside of current structures and paradigms to address challenges. Furthermore, Kirton (2011) reasoned that the two cognitive styles are on a continuum, meaning that both styles are equally needed, all create change, and needed to be used dependently on "nature of the problem," which is an essential key to creating organizational excellence.

The significance of cognitive style to organizations has been highlighted in the literature dating back to the 1980s with the emergence of decision-making styles, personality styles, and learning styles, all of which shaped the use of cognitive styles in practical associations to management, engineering, business, and education (Kozhevnikov, 2007). The use of these styles has been controversial at times; however, the study and application of cognition from these perspectives generally have served the purpose of creating organizational excellence by enhancing personal awareness for individual development, enriching individual learning experiences, reinforcing the value of lifelong learning, and increasing organization productivity by improving problem solving by honoring its importance and developing a deeper understanding of the

different ways that individuals approach decision making (Kirton, 1980, 1984, 1985; Kolb, 1984; Myers & McCaulley, 1985). Drucker (1969) summarized, "Whenever you see a successful business, someone once made a courageous decision" (p. 50).

## Summary and Transition

Chapter 2 provided a thorough review of the literature associated with the purpose of this study on problem solving, decision making, and Kirton's A-I theory in HPOs. It began with an introduction to the vast amount of literature on cognition in chronological order to set the stage to examine the significance that cognitive styles have played and still play in the organizational process of creating excellence. After a thorough discussion of the purpose of the literature review and the search strategies used to meet the focus and intent of the study, with particular attention on the Kirton A-I theory and KAI Inventory, Chapter 2 also engaged in an empirical research methodology (Kirton, 1976, 1980, 1985, 1999) by investigating the historical literature that defined high-performance boards, delineated operating norms and decision making, assessed nonprofit board performance, and analyzed the significance of cognitive style in organizational excellence (Dignam & Tenuta, 2015; Gazley & Bowers, 2013; Kirton, 2011; Parks & Hilvert, 2016).

A historical review of the literature grounding cognitive style illuminated a chronological association to its roots in psychology. This association to psychology added richness to the journey this research took as it integrated other disciples and practical applications across the spectrums of management, engineering, business, and business. Chapter 2 paid special attention to the application of the theoretical framework presented by the A-I theory and delineated its functionality through the use of the KAI

Inventory, how the instrument was designed, and how it has been used to bring strong validity and reliability to the numerous studies that have been conducted (Kirton, 2011). The concept of cognitive gap was defined and explained from the perspective of the variance in individual KAI Inventory scores relative to facilitating organizational performance and excellence (Kirton, 1976, 1985). Next, this chapter offered a historical overview of problem solving and decision making that elucidated the definitions of both in relationship to the application of A-I theory (Kirton, 2011).

Chapter 2 also examined organizational excellence from the perspectives of historical events, outlining the TQC, TQM, and TQL efforts of public and private sector attempts at achieving excellence and more contemporary theories on what elements are necessary to ensure that organizations build excellence into their operational strategies. Outlining these historical events was followed by a thorough explanation of the importance of studying nonprofit boards, the ways in which they apply operating norms and decision making, and the status of how nonprofit boards assess performance in the process of becoming high-performance boards. In conclusion, Chapter 2 addressed the significance of cognitive style in organizational excellence by exploring scholarly expert beliefs on how cognitive styles affect organizational change. Chapter 2 began with a description of the strategy used to research the literature for this study, which led to the depth and breadth of scholarly writings presented to develop a foundation that provided the substance for this quantitative study.

In Chapter 3, the research method, design, and approach determined the most appropriate for this study are articulated by explaining the details of the setting, sample

size, and procedures used to conduct the study. Chapter 3 describes Gazley and Bowers's (2013) study, which discusses what makes a high-performance nonprofit board, and Dignam and Tenuta's (2015) archival research on the self-assessments of 75 nonprofit boards. Dignam and Tenuta modified questions from the Board Self-Assessment Questionnaire to create questions for the NBPQ, developed to correlate to performance assessments in relationship to KAI Inventory scores as a foundational predictive structure. The characteristics of the participants, data collection, and analysis protocols are discussed in detail to include ethical considerations to protect the participants. Finally, Chapter 3 presents a review of the threats to the validity and reliability of this study on problem solving, decision making, and A-I theory in nonprofit organizations.

Chapter 4 provides information about this study's target population and the specific sample of participants who completed the two instruments and reviewed the variable constructs. It discusses the correlation and regression results and the *t*-test analysis. Chapter 4 then explores reliability in relationship to the relevance of the assumptions and examines RQ hypothesis testing. Chapter 5 concludes the study by reviewing the findings of each RQ and discussing theoretical and practical implementations. The last chapter also defines the limitations and offers recommendations for future research.

# Chapter 3: Research Method

In this quantitative study, the researcher sought to better understand the effect of cognitive style on problem solving and decision making on high-performance boards. This study contributed to the literature by addressing the influence of cognitive preferences within nonprofit volunteer organizations for the first time while providing recommendations for future research (Occupational Research Centre, 2015; Stum, 2009). Chapter 3 provides details of the research design and approach, setting and sample size, procedures and instruments for data collection and analysis, ethical considerations, and threats to validity. The nonexperimental design of this study used cognitive style (adaption and innovation) as the IVs and problem solving and decision making as the DVs.

The two RQs and hypotheses were as follows:

RQ1: Does a nonprofit board member's cognitive style predict problem-solving outcomes?

$H_{01}$: A nonprofit board member's cognitive style, as measured by the KAI Inventory, does not predict problem-solving outcomes, as measured by the NBPQ.

$H_{a1}$: A nonprofit board member's cognitive style, as measured by the KAI Inventory, predicts problem-solving outcomes, as measured by the NBPQ.

RQ2: Does a nonprofit board member's cognitive style predict decision-making outcomes?

$H_{02}$: A nonprofit board member's cognitive style, as measured by the KAI Inventory, does not predict decision-making outcomes, as measured by the NBPQ.

$H_{a2}$: A nonprofit board member's cognitive style, as measured by the KAI Inventory, predicts decision-making outcomes, as measured by the NBPQ.

This study addressed a predictive association rather than cause and effect because once the association between two of the measures was known, a prediction of a form of behavior could then be associated from the knowledge of the other (Creswell, 2009). This study addressed the association between the IVs of cognitive style (adaption and innovation) and the DVs of problem solving and decision making, and the degree to which these variables varied within one another. Addressing the association between the IVs and DVs allowed me to use the findings to inform better nonprofit board performance.

## Research Design and Approach

This quantitative study followed a nonexperimental, predictive design that involved the use of regression analysis and correlational statistics to measure and describe the relationships between multiple variables and inventory scores in a behavioral context (see Creswell, 2012). An experimental design was not appropriate for this study because the individual nature of cognitive style meant that it could not be manipulated. The study used a survey design by administering two instruments, namely, the KAI Inventory to examine the IV, or predictor variable, of cognitive style, and the NBPQ to correlate the DVs, or criterion variables, of problem solving and decision making in relationship to nonprofit board performance.

The archival data provided a generalized association to the correlation of the KAI Inventory scores indicating cognitive styles of highly adaptive to highly innovative. KAI

Inventory data collection and storage were hosted by the KAI Distribution Centre in Hertfordshire, the United Kingdom, and the NBPQ used a secure link to SurveyMonkey to collect and store the nonprofit board performance data. The data from both surveys were transferred into SPSS v.22 for analysis.

## Archival Database

The researcher used archival data from two ASAE studies published in 2013 and 2015 that addressed nonprofit board performance from the perspectives of CEOs, executive directors, and members of nonprofit boards. The first ASAE study included an electronic survey administered to 1,585 members serving organizations based in the United States and filing IRS 990 returns as nonprofits to determine what makes high-performing nonprofit boards (Gazley & Bowers, 2013). These data were used as background information relative to the factors determined to measure highly performing boards. The second ASAE study included a voluntary self-assessment survey, designed by BoardSource in partnership with ASAE between 2009 and 2015, of 1,367 CEOs, chairs, or presidents and board members representing 75 nonprofit organizations to assess board performance (Dignam & Tenuta, 2015). Permission was granted to access the BoardSource/ASAE questionnaire by the BoardSource vice president of programs and chief governance officer and the ASAE vice president of publications and knowledge integration president, who approved the use of 10-questions from the Dignam and Tenuta (2015) study. These data were mined to develop the NBPQ with the approved 10 questions used in this study to collect responses from the participants on their assessment of the performance of the boards on which they served. Data collected from the NBPQ

were used to correlate the participants' responses with their KAI Inventory scores. All data were deidentified to maintain the participants' privacy.

## Setting and Sample

In quantitative research, it is important to determine the most appropriate setting and sample of the target population being studied to ensure that statistically significant conclusions can be established (Creswell, 2009). To determine a representative sample from the entire nonprofit board population that were studied, the researcher examined the sample structures from the Gazley and Bowers (2013) and Dignam and Tenuta (2015) studies. After coordinating with the ASAE researchers, who had a pool of more than 21,000 possible boards, of which 13,304 were eligible for the Gazley and Bowers study, the pool was narrowed to include boards comprising 17 to 20 members, which research has shown to be the size of the highest performing boards (Dignam & Tenuta, 2015). Further research into both studies showed high survey completion success rates when using CEO leadership as the conduit.

From the initial CEO responses, this researcher selected 12 high-performing nonprofit boards to participate and screened them to ensure that they met the criteria: (a) 17 to 20 members on a board; (b) 501(c)(3) tax status (charitable, educational, and scientific); and (c) single organizations with no affiliates, chapters, or sections. The CEOs of the chosen boards were asked to select 15 members randomly from their boards to participate in the study; 12 qualifying responses to the performance questionnaire and the KAI Inventory were required for boards to continue their participation in the study. From the pool of initial CEO responses, at least 20 boards were prioritized for possible

participation, and a stratified sampling strategy was applied to volunteer board members randomly chosen to participate. Next, this researcher ensured that all board members recommended by the CEOs understood the time commitments of their participation and volunteered as participants in the process.

Research supported a 12% response rate based on a target population of 13,304, with 1,585 valid returns after largely incomplete responses were removed (Gazley & Bowers, 2013). Dignam and Tenuta (2015) showed their results as being very close to 100% by stating that "several steps are built into the process with the goal to achieve 100 percent participation, which is quite common" (p. 6). Kirton's (1999) 20% estimated mortality rates of the KAI Inventory for similar populations provided guidelines requiring an increase in the initial sample size calculations to ensure an appropriate return ratio for validity and reliability of this study's results. Researchers who have examined problem solving and decision making in relationship to A-I theory and organizational performance have reported medium to large effect sizes ($r$ = .02 to $r$ = .29; Chan, 2000; Combs et al., 2005; Goldsmith, 1994a; Jablokow & Booth, 2006; Kirton, 1999, 2011).

Contact information for eligible boards and volunteers was initially coordinated through the ASAE; however, after extensive correspondence, this researcher was advised to use resources that were publicly available from the IRS Exempt Organizations Business Master File Extract (EO BMF). In addition, this researcher used publicly available resources through GuideStar, Exact Data, and Dunhill International List Company, Inc., which provided nonprofit board CEO and member contact information for data collection. The original plan was to select 12 high-performing nonprofit boards

and have their CEOs request 15 random members to participate in the study, and then screen boards to ensure that they met the criteria to ensure a homogeneous sample. Intensive data collection produced only 11 nonprofit boards with not enough participation to meet the sample size required to power the study. Further data collection via convenience sampling of additional volunteers yielded a total of 163 volunteers who chose to participate. One hundred and two ($N = 102$) board members were recruited and completed the study, a response rate of 63%. The board members were volunteers, so the sample was considered a sample of convenience. Therefore, generalizing the findings to the populations of all boards that met the inclusion criteria was not possible.

The inclusion criteria were changed to accommodate the recruitment of a sufficient sample to power the study. The planned inclusion criteria were (a) 17 to 20 members on a board; (b) 501(c)(3) tax status (charitable, educational, and scientific); and (c) single organizations with no affiliates, chapters, or sections. However, the criteria of including only board members sitting on boards of 17 to 20 members was too exclusive, causing recruitment of the sample to stall. Therefore, the criterion of 17 to 20 members on a current board was relaxed to yield a larger sample. Board membership was displayed by the number of board members as 1 to 12, 13 to 20, and 21 to 50.

To ensure that research findings are not the result of chance, Gravetter and Wallnau (2008) proposed a higher statistical power to improve probabilities, stating 80% as a minimum acceptable power. The minimum sample size of this study was calculated using an a priori analysis through G*Power v.3.1.9.2. A simple linear regression with one IV was used as the primary statistical analysis. For this statistical test, the researcher used

a power of 0.95, Cohen's medium effective size of 0.15, and a level of significance of 0.05 to calculate the sample size. The minimum sample size was 89 participants ($N = 89$) to achieve at least 95% power. To ensure allowances for the estimated KAI Inventory mortality rates of 20% to 40% experienced by other researchers (Kirton, 1999), this researcher used 11 nonprofit boards and additional individual members, which yielded 102 volunteer participants as the sample size.

## Procedures

Data collection for this study began by coordinating with the ASAE researchers to explain the process requested for participation identification and to determine the most effective ways to ensure the privacy of the participants and the integrity of data. The ASAE assisted by providing information from the IRS EO BMF, a publicly available database, and recommending GuideStar as a commercial data organization for contacting nonprofit boards that fit the criteria. This consistency helped to ensure the participants' ease of completion, interest in completing the surveys within the time frame, and trust in the process.

The survey process began by sending invitations to CEOs of boards with 501(c)(3) tax status (charitable, educational, and scientific to participate in the study. Second, if the CEOs were interested in their boards participating, they were asked to forward the e-mail invitation to their boards' executive directors and at least 12 to 15 of their board members at random. The invitation explained the purpose of the survey and requested that the participants provide their informed consent if they were interested in participating. Third, after reviewing the details of the context of the study, the

participants were asked to confirm their participation by following a link to the formal consent form, which required them to agree to all the terms before they could continue to the surveys.

This informed consent provided the participants with details about the study, including the voluntary nature of their involvement, the inherent risks of their participation, the confidentiality protocols for their protection, and the various benefits to them for being in the study. In addition, my contact information was readily accessible in the documentation of the e-mail and available in each link that the participants followed. Once the interested participants responded to the invitation by digitally consenting to their participation in the study on SurveyMonkey, they were permitted to proceed to the NBPQ for completion. After completing the NBPQ, participants were assigned personal identification codes for privacy and received an e-mail from the KAI Distribution Centre to complete the KAI Inventory.

Next, participants received instructions on how to follow the link to the KAI Inventory for completion, which was linked to the secure website hosted by the KAI Distribution Centre. The individual KAI Inventory scores were confidential and were accessible only by and to this researcher, who holds a current KAI Inventory practitioner certification (see Appendix A). Participants' individual KAI Inventory scores were then electronically scored and interpreted. All participants received feedback about their cognitive styles in relationship to their A-I theory preferences.

The initial e-mail invitation instructed the participants on how to use the link to the NBPQ, which was available on SurveyMonkey (see Appendix B). Keeping consistent

with Dignam and Tenuta's (2015) study, participants were given 8 to 10 days to complete the NBPQ and the KAI Inventory. They were sent reminder e-mails to assist the process. Because of the strategic nature of the board positions and the stated duration of service on the boards by the participants as 3 to 6 years, the probability of a respondent being a minor was extremely unlikely, validated by the KAI Inventory demographic data.

## Instrumentation

Once the 12 boards were chosen and the members randomly selected, all participants who voluntarily consented to join the study were asked to complete the NBPQ and the KAI Inventory.

### KAI Inventory

The KAI Inventory was developed and designed in 1976 by Kirton as the result of his workplace observations in relationship to his A-I theory related to all individuals being creative and having distinct preferences for either adaption or innovation. The KAI Inventory holds 33 items, with all but one item relevant to the process of determining cognitive style (see Appendix C). This self-reporting instrument distinguishes individuals in terms of how adaptive or innovative their preferences are on a range from highly adaptive, with a score from 32 to a mean of 95, to highly innovative, with a score from a mean of 96 to 160. However, the actual range is more likely to spread from highly adaptive, at 45, to highly innovative, at 145, with a population mean of approximately 95, depending on occupational status and other determinates as researched and correlated (Kirton, 1999). These statistics translate to a delineation in problem-solving approaches in individuals with KAI Inventory scores of 32 to 95 as being relatively adaptive and

individuals with KAI Inventory scores of 96 to 160 as having relatively innovative approaches to problem solving (Kirton, 1999). These findings are a value of the KAI Inventory because it measures how individuals approach problem solving differently and addresses the different behaviors relative to managing the cognitive gaps associated with them.

Kirton (1999) also provided scores for constructs of cognitive style as 17 to 63 in sufficiency of originality, 7 to 33 in efficiency, and 14 to 56 in rule/group conformity, which were calculated through equations with regard to the differences in total and style scores to determine cognitive gap associations. Research has shown that the approach that individuals use when solving problems makes a difference in how they confront problems and that those differences influence problem-solving performance (Hammerschmidt, 1996). Therefore, the KAI Inventory was an asset to this study. The KAI Inventory gathered demographic data on age, sex, occupation/title, department, and educational status that provided additional data for use in the analysis phase where appropriate.

**Validity and Reliability**

The integrity of the KAI Inventory is protected first by the policy that only a certified practitioner is permitted to administer the inventory and interpret the individual results. Certification requires participation in a 40-hour workshop and completion of a graded final exam. Second, validity of the KAI Inventory instrument historically used the Kuder-Richardson Formula 20 (K-R 20), resulting in a .88 on the main sample ($N = 532$) and an accounting internal variance of 78% (Kuder & Richardson, 1937). Kirton (1976)

calculated a replication sample test ($N = 562$), which also resulted in .88. Next, the heterogeneous demographics in Kirton (1999) of age, sex, occupational status, and educational level also yielded a .88 on the replication sample ($N = 276$) using the K-R 20. In addition, these calculations provided consistency in an additional 31 studies highlighted in Kirton (1999) providing persistently high internal consistency. From 1976 to 1999, more than 7,000 KAI Inventories conducted in 12 countries and completed in numerous languages, yielded internal reliability scores of .79 to .91 (Kirton, 1999). Criterion validity measured through cognitive assessment correlations and construct validity through factor analysis yielded high validity.

Cronbach's alpha coefficient also was used to determine the reliability of the KAI Inventory (Kirton, 1999). Table 6 displays the reliability of the KAI Inventory factors of "SO-Sufficience Originality (.83). E-Efficiency (.76), and R-Rule/Group conformity (.83)" (Kirton, 1999, p. 90). The KAI Inventory had strong validity and reliability results. Therefore, the KAI Inventory was an essential tool for correlating the cognitive style scores of nonprofit executive directors and board members with the characteristics required for this study using the archival data addressing problem solving, decision making, and nonprofit board organizational performance.

Table 6

*KAI Inventory Internal Reliabilities of Factor Traits*

| Construct | No. of items | *M* | *SD* | A |
|---|---|---|---|---|
| Sufficiency of originality | 13 | 41 | 9 | .83 |
| Efficiency | 7 | 19 | 6 | .76 |
| Rule/Group conformity | 12 | 35 | 9 | .83 |
| Total KAI | 32 | 95 | 18 | .88 |

*Note.* From "Kirton Adaption-Innovation Inventory manual 3rd Edition," by M. Kirton, 1999, Occupational Research Centre, Berkhamsted, UK, Table 21, p. 90. © m.j.kirton. Printed with permission.

**Nonprofit Board Performance Questionnaire**

The NBPQ was developed after a thorough review of the BoardSource/ASAE Board Self-Assessment for Associations instrument, which holds 68 items aligned with the six responsibilities outlined in Rosenthal (2012) and the 10 responsibilities in Dignam and Tenuta (2015) to address the questions being asked by industry experts (Dignam & Tenuta, 2015; Ingram, 2015; Rosenthal, 2012). Therefore, the BoardSource/ASAE Board Self-Assessment for Associations questions that provided the categorical data for Dignam and Tenuta's study were data mined to identify 10 questions associated with the two RQs' outcomes regarding problem solving and decision making, with five questions in each section of the questionnaire for this study. Participants' responses to these questions were analyzed in relationship to their perceptions of board performance in each of the outcome areas. These scores were transferred from SurveyMonkey into SPSS and were instrumental in the data analysis and correlation to the KAI Inventory.

The questionnaire used 10 questions from Dignam and Tenuta's (2015) 68 survey questions and asked participants to rate the performance of the boards on which they served on a 5-point Likert scale (0 = *poor*, 1 = *fair*, 2 = *OK*, 3 = *good*, and 4 = *excellent*).

It took the participants about 30 minutes to complete. In the instructions of the NBPQ, participants were asked to do the following:

> Please rate the performance of the nonprofit board you currently serve on in relationship to the following questions in context to problem solving and decision making using a 5-point scale: 0 = *poor*, 1 = *fair*, 2 = *OK*, 3 = *good*, and 4 = *excellent*.

Further clarity was provided to the participants by dividing the NBPQ into two sections, with each section being specific to the two RQs. Each section asked five questions in relationship to board performance in the context of problem solving and decision making. The relationship of the identified questions to the RQs is displayed in Tables 7 and 8.

Table 7

*Board Performance: Problem Solving*

| RQ1: Does a nonprofit board member's cognitive style predict problem-solving outcomes? | All respondents |
|---|---|
| 1. Articulating a vision that is distinct from the mission. | 2.61 |
| 2. Tracking progress towards meeting the association's strategic goals. | 2.87 |
| 3. Planning of board officer succession. | 2.48 |
| 4. Reviewing its committee structure to ensure it supports the work of the board. | 3.14 |
| 5. Focusing regularly on strategic and policy issues versus operational issues. | 2.63 |

*Note.* From "Assessing board performance: An analysis of ASAE-BoardSource board self-assessment results," by M. Dignam and R. Tenuta, 2015, ASAE Foundation, Washington, DC. From the ASAE-BoardSource *Board Self-Assessment for Associations,* copyright 2019-2017 ASAE and BoardSource. Reprinted with permission.

Table 8

*Board Performance: Decision Making*

| RQ2: Does a nonprofit board member's cognitive style predict decision-making outcomes? | All respondents |
|---|---|
| 6. Using the association's mission and values to drive decisions. | 2.86 |
| 7. Engaging in an effective strategic planning process. | 2.82 |
| 8. Examining the board's current composition and identifying gaps, e.g., in professional expertise, influence, ethnicity, age, gender. | 2.76 |
| 9. Identifying standards against which to measure organizational performance e.g., industry benchmarks, competitors or peers. | 2.53 |
| 10. Efficiently making decisions and taking action when needed. | 3.10 |

*Note.* From "Assessing board performance: An analysis of ASAE-BoardSource board self-assessment results," by M. Dignam and R. Tenuta, 2015, ASAE Foundation, Washington, DC. From the ASAE-BoardSource *Board Self-Assessment for Associations,* copyright 2019-2017 ASAE and BoardSource. Reprinted with permission.

The validity and reliability of the BoardSource/ASAE Board Self-Assessment for Associations began by using a proven BoardSource assessment tool that had been helping boards for more than a decade. Through a careful customization process, this tool was revised by the researcher to reflect the unique needs of the nonprofit community. Therefore, by using 10 of the 68 items originally designed for the assessment and maintenance of consistency between and among the 10 responsibilities in Dignam and Tenuta (2015), namely, mission; strategy; funding; public image; board comprehension; program oversight; board structure, meetings, and program; financial; CEO; and oversight to the hypotheses in this study, a cross-reference correlation was created as an additional strategy to ensure validity and reliability (Dignam &Tenuta, 2015; Ingram, 2015).

## Data Analysis

This study focused on answering the two RQs to understand how to achieve organizational excellence in nonprofit organizations by examining how board leaders and

members' cognitive styles influenced problem solving and decision making within the context of the various board responsibilities in relationship to organizational outcomes. To ensure a more homogeneous sample, the data collected for this study required the nonprofit boards to meet the following criteria: 17 to 20 board members; 501(c)(3) tax status (charitable, educational, and scientific); and single organizations with no affiliates, chapters, or sections. From the qualifying boards, this study performed an initial analysis comparing board members from these specific organizations to ensure no significant differences among the groups in relation to the IVs in this study. A one-way ANOVA analysis compared mean board member scores across organizations through the application of appropriate descriptive statistics to characterize sample demographics and break out the means for each measure.

ANOVA analysis was initially specified for the comparison of the board types on the KAI and NBPQ. However, ANOVA is used where there are three or more independent groups, and because members of scientific boards were not included in the sample, only two groups of charitable and educational boards were obtained. In addition, the sample size was not large enough for an effective ANOVA analysis. For these reasons, to compare the two independent groups, independent-samples *t* tests were used in lieu of the ANOVA tests. A Pearson correlation also identified preliminary associations among the measures.

Based on the literature review, the researcher developed two RQs. Planned analyses primarily performed and used linear regression analyses and appropriate tests of

the assumptions to assess each one. Following are the RQs, associated hypotheses, and respective planned analyses.

RQ1: Does a nonprofit board member's cognitive style predict problem-solving outcomes?

$H_{01}$: A nonprofit board member's cognitive style, as measured by the KAI Inventory, does not predict problem-solving outcomes, as measured by the NBPQ.

$H_{a1}$: A nonprofit board member's cognitive style, as measured by the KAI Inventory, predicts problem-solving outcomes, as measured by the NBPQ.

To assess Hypothesis 1, a linear regression was conducted, with cognitive style as the predictor variable and problem solving as the criterion variable. An $R^2$ was reported to assess model fit, and the $F$ statistic was used to determine statistical significance.

RQ2: Does a nonprofit board member's cognitive style predict decision-making outcomes?

$H_{02}$: A nonprofit board member's cognitive style, as measured by the KAI Inventory, does not predict decision-making outcomes, as measured by the NBPQ.

$H_{a2}$: A nonprofit board member's cognitive style, as measured by the KAI Inventory, predicts decision-making outcomes, as measured by the NBPQ.

To assess Hypothesis 2, a linear regression was conducted, with cognitive style as the predictor variable and decision making as the criterion variable. An $R^2$ was reported to assess model fit, and the $F$ statistic was used to determine statistical significance.

## Ethical Considerations

This study engaged in a thorough Walden University approval process (IRB approval # 01-12-17-0419849). The purpose of the IRB is to align and enforce federal regulations and university standards for the ethical protection of all parties involved in research. All students conducting research at Walden University must receive IRB approval in order to obtain credit for the work.

All participants were provided with the informed consent form and were required to sign it online before they could gain access to the secure survey site. In this way, all participants acknowledged their understanding of their involvement in the study, their responsibilities during the process, and the importance of the researcher's maintenance of their privacy and protection under the law. The information in the consent form addressed the policies, procedures, and processes used to maintain the confidentiality of their data and their personal anonymity. This information was accessible in the e-mails and websites used for communication throughout the study. There were no reports of problems with either the questions from the BoardSource/ASAE Board Self-Assessment for Associations or the KAI Inventory. Therefore, there was no expectation of undue stress or risk of anxiety to the participants.

## Threats to Validity

Creswell (2009) discussed distinct threats to validity as threats from statistical conclusions and/or internal and external factors; furthermore, he defined each threat through different types in accordance with the effect on the outcomes. Evaluating data accurately is essential to the validity of any study and requires a researcher to examine

statistical construct and conclusions closely to ensure no violation of test assumptions occur. Therefore, in this study, careful alignment from statistical findings to the concluding relationships provided an important protocol. In addition, the nonprofit board performance data and KAI Inventory results supported a normal distribution assumption.

The five threats to internal validity are ambiguous temporal precedence, confounding, experimenter bias, instrument change, and selection bias (Creswell, 2009). Ambiguous temporal precedence validity is concerned with clarity of line-of-order issues. This study examined multiple criterion variables (i.e., the DVs) that could have shown changes in a DV that would have been attributed to variations in additional variables, monitoring for the possibility of confounding validity was part of the process. The researcher did not have direct contact with the 102 participants, which helped to ensure that experimenter bias did not occur, meaning that the researcher did not have the opportunity to influence the participants unintentionally.

The possibility of instrument change was noted in the BoardSource/ASAE Board Self-Assessment for Associations because of the customization options and that it was conducted from 2009 to 2015. However, by comparing data from the participants in this study to the same questions from the BoardSource/ASAE Board Self-Assessment for Associations survey, the researcher maintained consistence and validity. These data provided conclusions about validity bias in relationship to the already studied groups relative to cognitive style and board performance data.

## Summary and Transition

The objective of this study was to determine whether there was a relationship between cognitive style (i.e., adaptive or innovative) and problem solving, decision making, leader facilitation of problem-solving capacity, and the management of cognitive gaps within high board performance. Chapter 3 provided details about the methodology for this quantitative survey design using the NBPQ and the KAI. The NBPQ measured members' assessment of the performance of the boards they were serving on at the time of the study. The KAI Inventory measured the cognitive styles of nonprofit board executive directors and members. This chapter explained the research method, nonexperimental survey design, and approach to this quantitative study.

Chapter 3 stated the setting, sampling, and procedure details about the process required to ensure that participants with the best fit were invited to participate. The two instruments, the NBPQ and the KAI Inventory, met the objectives of this study. The study described these instruments thoroughly to ensure a clear understanding of their integration for statistical outcomes. The data analysis thoroughly addressed each RQ and hypothesis. Ethical considerations were outlined and defined to ensure the protection and security of all participants and data concerned. The chapter concluded with a review of the types of validity and their applicability regarding the issues investigated in this study.

Chapter 4 offers the results of the thorough data analyses performed on the data collected from the 102 nonprofit board participants. This chapter uses the findings to statistically associate A-I theory with the volunteer nonprofit boards by exploring the relationship between variations in cognitive styles, problem-solving and decision-making

outcomes on nonprofit board performance to determine whether nonprofit board leadership cognitive styles influenced their ability to facilitate members' problem-solving capacity and manage cognitive gaps to ensure organizational excellence. Finally, Chapter 5 communicates the limitations of the study, offers the interpretation of the data, and highlights future research implications.

# Chapter 4: Results

Chapter 4 provides the results of this research and is organized to present a brief overview of the study purpose, RQs and hypotheses, statistical analysis, and findings. This chapter includes data collection information as well as response rates and descriptive findings for the categorical variables and descriptive statistics, including presentation of the measures of central tendency and variability for the KAI Inventory and the NBPQ instruments for the collected data. Correlation and reliability are addressed by including correlation measures for the inferential analysis variables, as well as the Cronbach's alpha coefficients for internal consistency reliability of the NBPQ constructs of problem solving and decision making. The statistical analysis includes the assumptions related to the inferential analysis and the findings for the linear regressions and tests of hypotheses. A 95% level of significance ($p < .05$) was set for all tests of hypotheses. SPSS v.22 was used for all descriptive and inferential analyses.

The purpose of this quantitative, correlational study was to associate A-I theory with leading nonprofit organizations by exploring the relationship between variations in cognitive styles and problem-solving and decision-making outcomes on nonprofit board performance to determine whether the cognitive styles of nonprofit board leadership influenced their ability to facilitate members' problem-solving capacity and manage cognitive gaps to ensure organizational excellence. The results served to fill the gap in the literature regarding the use of the A-I theory in nonprofit organizations to assist nonprofit board leaders and members by providing important insight into ways to improve their problem-solving and decision-making processes in relationship to their

continual pursuit of excellence. The nonexperimental design included cognitive style (dummy coded into two independent groups of adaption and innovation) as the IV and problem solving and decision making as the DVs for RQ1 and RQ2, respectively. Two separate simple linear regression models were used to test the hypotheses and answer the RQs:

RQ1: Does a nonprofit board member's cognitive style predict problem-solving outcomes?

$H_{01}$: A nonprofit board member's cognitive style, as measured by the KAI Inventory, does not predict problem-solving outcomes, as measured by the NBPQ.

$H_{a1}$: A nonprofit board member's cognitive style, as measured by the KAI Inventory, predicts problem-solving outcomes, as measured by the NBPQ.

RQ2: Does a nonprofit board member's cognitive style predict decision-making outcomes?

$H_{02}$: A nonprofit board member's cognitive style, as measured by the KAI Inventory, does not predict decision-making outcomes, as measured by the NBPQ.

$H_{a2}$: A nonprofit board member's cognitive style, as measured by the KAI Inventory, predicts decision-making outcomes, as measured by the NBPQ.

## Sample Demographics

Information was collected on the demographics of age, gender, and highest level of education completed. The ages of the 102 board members in the sample ranged from 28 to 81 years ($M$ = 49.3 years, $SD$ = 13.1 years). Board members from charitable organizations ($n$ = 82) ranged in age from 28 to 81 years ($M$ = 49.9 years, $SD$ = 13.3

years). Board members from educational organizations ($n$ = 20) ranged in age from 30 to 75 years ($M$ = 46.6 years, $SD$ = 12.3 years). Three categorical demographic variables were measured and included the type of 501(c)(3) organization in which each board member belonged, the number of people on the board, and the member's role on the board. Table 9 presents the frequency counts and percentages for the categorical demographic variables of gender and highest education level completed, along with the three descriptive variables according to all 102 board members, including the 82 board members of charitable organizations, and the 20 board members of educational organizations. Board members of scientific organizations did not volunteer for inclusion in the study.

Table 9

*Frequency Counts and Percentages of Demographic and DVs for All Board Members, Charitable Board Members, and Educational Board Members*

| | All board members ($N$ = 102) | | Board type charitable ($n$ = 82) | | Board type educational ($n$ = 20) | |
|---|---|---|---|---|---|---|
| Variable/Classification | Freq. | % | Freq. | % | Freq. | % |
| Gender | | | | | | |
| Female | 49 | 48.0 | 41 | 50.0 | 8 | 40.0 |
| Male | 53 | 52.0 | 41 | 50.0 | 12 | 60.0 |
| Highest level of education | | | | | | |
| High school | 11 | 10.8 | 11 | 13.4 | --- | --- |
| Associate's degree | 8 | 7.8 | 5 | 6.1 | 3 | 15.0 |
| Bachelor's degree | 35 | 34.3 | 23 | 28.1 | 12 | 60.0 |
| Juris doctorate degree | 2 | 2.0 | 1 | 1.2 | 1 | 5.0 |
| Master's degree | 38 | 37.3 | 37 | 45.1 | 1 | 5.0 |
| PhD | 8 | 7.8 | 5 | 6.1 | 3 | 15.0 |
| No. of people on board | | | | | | |
| 1-12 | 50 | 49.0 | 40 | 48.8 | 10 | 50.0 |
| 13-20 | 43 | 42.2 | 35 | 42.7 | 8 | 40.0 |
| 21-50 | 9 | 8.8 | 7 | 8.5 | 2 | 10.0 |
| Member's role on the board | | | | | | |
| Board member | 59 | 57.8 | 43 | 52.4 | 16 | 80.0 |
| Executive director/president | 32 | 31.4 | 30 | 36.6 | 2 | 10.0 |
| CEO | 11 | 10.8 | 9 | 11.0 | 2 | 10.0 |

As would be expected with a sample that included a majority of charitable board members ($n$ = 82 board members, 80.4% of the sample), the proportions of charitable board members in each demographic and descriptive variable category were similar to the overall proportions for the entire sample of 102 board members. The distribution of educational board members ($n$ = 20, 19.6% of the sample) in each group of the demographic and descriptive variables was similar to the overall sample and charitable board members in the category of number of people on the board.

The distributions of board members were different for the educational board members and the charitable board members and all board members on the other variables. Men sat in the majority on educational boards (60% of members). The genders were evenly split for the charitable boards and were more closely proportioned overall, with 53% of all board members being men. The 11 board members who claimed high school as their highest level of education sat on charitable boards. Sixty percent of the educational board members claimed a bachelor's degree as their highest level of education, a greater proportion than for charitable boards (28.1%) and all board members combined (34.3%). Furthermore, in this sample participants selected their role on the board as either CEO, director/president, or member. A greater proportion of participants on educational boards (80%) contributed as members, in comparison to participants on charitable boards (52.4%) and all participants combined (57.8%). Conversely, a larger proportion of the charitable board participants were classified as executive director/president or CEO (47.6%) than participants of the educational board type (20%).

## Descriptive Statistics

The board members completed two survey instruments: the KAI Inventory and the NBPQ. Table 10 presents the measures of central tendency and variability for the constructs derived from the two surveys. The values for the measures did not appear to vary greatly between the two board types of charitable and educational.

Table 10

*Measures of Central Tendency and Variability of the Variable Constructs for All Board Members, Members of Charitable Boards, and Members of Educational Boards*

| Instrument/Construct/Group | *n* | # of Items | *M* | *SD* | *Mdn* | Sample range | A or N/A |
|---|---|---|---|---|---|---|---|
| KAI | | | | | | | |
| Sufficiency of originality | | 13 | | | | | N/A |
| All board members | 102 | | 48.45 | 7.87 | 48.50 | 25 – 63 | |
| Board type = Charitable | 82 | | 47.82 | 7.98 | 48.00 | 25 – 62 | |
| Board type = Educational | 20 | | 51.05 | 6.97 | 50.50 | 33 – 63 | |
| Efficiency | | 7 | | | | | N/A |
| All board members | 102 | | 18.65 | 5.63 | 18.50 | 8 – 32 | |
| Board type = Charitable | 82 | | 18.17 | 5.58 | 18.00 | 8 – 31 | |
| Board type = Educational | 20 | | 20.60 | 5.56 | 21.00 | 13 – 32 | |
| Rule/Group conformity | | 12 | | | | | N/A |
| All board members | 102 | | 38.05 | 8.18 | 38.00 | 23 – 57 | |
| Board type = Charitable | 82 | | 37.94 | 8.23 | 38.00 | 23 – 57 | |
| Board type = Educational | 20 | | 38.50 | 8.20 | 38.00 | 25 – 54 | |
| Total KAI | | 32 | | | | | N/A |
| All board members | 102 | | 104.97 | 17.43 | 102.00 | 63 – 145 | |
| Board type = Charitable | 82 | | 103.76 | 17.63 | 99.50 | 63 – 145 | |
| Board type = Educational | 20 | | 109.95 | 16.05 | 107.00 | 81 – 143 | |
| NBPQ | | | | | | | .768 |
| Problem solving | | 5 | | | | | |
| All board members | 102 | | 12.54 | 4.05 | 13.00 | 1 – 20 | |
| Board type = Charitable | 82 | | 12.24 | 3.97 | 13.00 | 1 – 20 | |
| Board type = Educational | 20 | | 13.75 | 4.24 | 14.50 | 6 – 20 | |
| Decision making | | 5 | | | | | .814 |
| All board members | 102 | | 13.79 | 4.16 | 15.00 | 1 – 20 | |
| Board type = Charitable | 82 | | 13.67 | 4.17 | 14.50 | 1 – 20 | |
| Board type = Educational | 20 | | 14.30 | 4.18 | 15.00 | 4 – 20 | |

*Note.* KAI = Kirton Adaption-Invention Inventory; NBPQ = Nonprofit Board Performance Questionnaire; *n* = Sample size of the Group; *M* = Mean; *SD* = Standard Deviation; *Mdn* = Median; N/A = Not Available.

## Group Comparison

A series of independent-samples *t* tests were performed to check for significant differences between the charitable and educational board members on the six derived constructs. A summary of the findings for the *t* tests is presented in Table 11. None of the means was statistically significant at the $p < .05$ level, suggesting homogeneity between the two board types on the KAI and NBPQ constructs. When comparing means between groups of unequal size, a large difference in sample sizes can result in an increase in a Type I error (Tabachnick & Fidell, 2013). A Type I error indicates that the means between the two groups are significantly different when they really are not. The independent-samples *t* tests performed to compare the charitable versus the educational boards for homogeneity across the KAI variables did not indicate statistical significance, so the possibility of a Type I error was not a concern (see Table 11). Variances between the two groups on each KAI outcome also were checked via Levene's test, which were not statistically significant, confirming that variances between the groups were not different.

Table 11

*Results of Independent-Samples* t *Tests of Variable Constructs for Mean Differences Between Board Types: Charitable and Educational*

| Variable/Group | *n* | *M* | *SD* | *MD* | *SE MD* | *t* | *p* |
|---|---|---|---|---|---|---|---|
| KAI: Sufficiency of originality | | | | -3.23 | 1.95 | -1.66 | .100 |
| Board type = Charitable | 82 | 47.82 | 7.98 | | | | |
| Board type = Educational | 20 | 51.05 | 6.97 | | | | |
| KAI: Efficiency | | | | -2.43 | 1.39 | -1.75 | .083 |
| Board type = Charitable | 82 | 18.17 | 5.58 | | | | |
| Board type = Educational | 20 | 20.60 | 5.56 | | | | |
| KAI: Rule/Group conformity | | | | -0.56 | 2.05 | -0.27 | .785 |
| Board type = Charitable | 82 | 37.94 | 8.23 | | | | |
| Board type = Educational | 20 | 38.50 | 8.20 | | | | |
| KAI: Total KAI | | | | -6.19 | 4.33 | -1.43 | .155 |
| Board type = Charitable | 82 | 103.76 | 17.63 | | | | |
| Board type = Educational | 20 | 109.95 | 16.05 | | | | |
| NBPQ: Problem solving | | | | -1.51 | 1.00 | -1.50 | .136 |
| Board type = Charitable | 82 | 12.24 | 3.97 | | | | |
| Board type = Educational | 20 | 13.75 | 4.24 | | | | |
| NBPQ: Decision making | | | | -0.63 | 1.04 | -0.60 | .547 |
| Board type = Charitable | 82 | 13.67 | 4.17 | | | | |
| Board type = Educational | 20 | 14.30 | 4.18 | | | | |

*Note.* *M* = mean, *MD* = mean difference, *SD* = standard deviation, *SE* = standard error, *t* = *t* statistic, *p* = *p* value, KAI = Kirton Adaption-Invention Inventory; NBPQ = Nonprofit Board Performance Questionnaire.

The individual variable constructs of the KAI tool were not used for hypothesis testing. Instead, the total KAI score was used to divide the sample of 102 participants into two groups according to the criteria described in Chapter 3. Specifically, the IV of cognitive style was derived from the total KAI score and delineated onto a derived variable of "KAI Group," with two groups of (a) adaption, which included 34 board members with a total KAI score between 32 and 95 inclusive, and (b) innovation, which included 68 board members with a total KAI score between 96 and 160 inclusive. Comparative analyses such as *t* tests were not performed using the KAI Group variable because the KAI group variable was used as the independent predictor variable for

hypothesis testing in the simple regression analyses using the DVs of NBPQ problem solving and NBPQ decision making.

## Correlation

Pearson's product-moment correlational analyses were performed to investigate the bivariate relationships between the KAI Group predictor variable and the variable constructs derived from the KAI and NBPQ. The variable of KAI Group was dichotomously coded as 0 = adaption and 1 = innovation, such that the adaption group was the referent in the correlation and regression analyses. Table 12 presents the correlation coefficients for the Pearson's product-moment correlation analyses.

Table 12

*Pearson's Product-Moment Correlation Coefficients for Predictor of KAI Group and Variable Constructs Derived from the KAI and NBPQ Instrumentation*

| Variable | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| 1. KAI group = Innovation | | | | | | |
| 2. KAI: Sufficiency of originality | .575** | | | | | |
| 3. KAI: Efficiency | .568** | .307** | | | | |
| 4. KAI: Rule/Group conformity | .627** | .435** | .654** | | | |
| 5. KAI: Total KAI | .735** | .759** | .765** | .874** | | |
| 6. NBPQ: Problem solving | -.086 | .069 | .025 | -.034 | .023 | |
| 7. NBPQ: Decision making | -.206* | -.005 | -.059 | -.084 | -.062 | .815** |

$N = 102$
* $p < .05$
** $p < .01$

A direct relationship (i.e., positive correlation) between two variables indicates that when the values of one variable increase or decrease, the values of the other variable move in a like manner. An indirect relationship (i.e., negative correlation) between two variables indicates that when values of one variable increase or decrease, the values of the other variable move in the opposite direction. Cohen (1988) defined strength of

association defined by correlation coefficients (effect size) as weak (+/- .10-.29), moderate (+/- .30-.49), and strong (+/- .50-1.0).

The variable of KAI Group was positively and strongly correlated with all of the KAI variable constructs, which was expected because the KAI Group variable was derived from the total KAI variable, which was a summation of the three KAI subgroup variables. The KAI Group variable was coded so that adaption was the referent and innovation was tested. Thus, the positive correlation of KAI Group to KAI: Sufficiency of Originality ($r = .575$, $p < .0005$); KAI: Efficiency ($r = .568$, $p < .0005$); KAI: Rule/Group Conformity ($r = .627$, $p < .0005$); and KAI: Total KAI ($r = .735$, $p < .0005$) suggested that higher scores on each KAI construct were associated with a board member being innovative. The KAI Group variable had a statistically significant weak and negative relationship with the NBPQ: Decision-Making variable ($r = -.206$, $p = .038$). The negative correlation suggested that innovative board members were associated with *decreases* in decision-making scores.

The KAI variable constructs also were positively and moderately to strongly correlated with each other. This association suggested that the KAI variable constructs moved in a like manner, that is, when scores of one variable increased or decreased, the values of the second variable in the association moved similarly. The KAI variable constructs were not statistically significantly correlated with the NBPQ variable constructs. The two NBPQ variable constructs of problem solving and decision making were strongly and positively correlated ($r = .815$, $p < .0005$), and the positive correlation suggested that the scores for the two variables moved in a similar manner, either

increasing together or decreasing together. The association between the two NBPQ variables was close to being multicollinear. Multicollinearity occurs when the IVs in a study are highly correlated with each other. Highly correlated has been defined as a correlation coefficient between two variables of .90 or greater (Pallant, 2013). When two variables are multicollinear, they might be assessing the same latent variable. Thus, the correlation coefficient of $r = .815$ between the two NBPQ constructs suggested that problem solving and decision making could possibly have been assessed using the information derived from using only one of the variables in an analysis.

## Internal Consistency Reliability

Internal consistency of a survey with the respondents' answers can be assessed using Cronbach's coefficient alpha. The KAI variable constructs were computed prior to receipt of the data set for analysis; therefore, internal consistency reliability could not be assessed for the KAI Inventory. However, the individual item scores comprising the two variable constructs of the NBPQ were available in the data set and could be tested using Cronbach's alpha coefficients.

A Cronbach's alpha value of .70 or greater indicates adequate reliability of an instrument with the data collected (Field, 2005). Table 2 presented the Cronbach's alpha coefficients for the NBPQ constructs of problem solving ($\alpha = .768$) and decision making ($\alpha = .814$). Therefore, internal consistency reliability was adequate for the NBPQ using the collected data.

## Tests of Assumptions

Pearson's product-moment correlations and two simple linear regression analyses were performed in this study. The data were investigated for the analysis assumptions of absence of outliers, normality, linearity, and homoscedasticity as related to the six variable constructs. Outliers have the potential to distort the results of an inferential analysis. A check of boxplots for the two DVs of problem solving and decision making was performed to visually inspect for outliers. Two outliers were found for problem solving, and three outliers were found for decision making. Each outlier was further examined, and it was determined that there were no extreme outliers, defined as values that extend beyond 1.5 box-lengths from the edge of the box (Pallant, 2013).

In addition, all outliers for both NBPQ variable constructs were in the acceptable range of the variables, and none of the outliers was extreme or pulling the mean far from the median on the constructs, as seen previously in Table 10. Therefore, it was determined that the outliers were not adversely affecting the data set (Pallant, 2013). Therefore, the absence of outlier assumption was reasonably met.

Normality for the scores of the two NBPQ variable constructs was investigated with SPSS Explore. The Kolmogorov-Smirnov test for normality indicated that the decision-making variable was not normally distributed at the $p = .01$ level. A visual check of histograms and normal Q-Q plots for the variable construct indicated normal distributions of both NBPQ variables. A comparison of the means and medians of the NBPQ variables showed numbers close in value (see Table 10) indicating that skew or

other characteristics of the distribution were not adversely affecting normality. Therefore, the assumption of normality was met.

The assumption of linearity between study variables was checked with a plot of standardized residuals, also called the normal P-P plot, from the regression model output. A linear relationship was noted between the observed and expected values, thus confirming linearity (Pallant, 2013). Figures 2 and 3 show the normal P-P plots for the regression models for the DVs of problem solving and decision making, respectively. The independent predictor variable of KAI Group was dichotomous, which explained the visual grouping of the data points along the line though the origin. However, the data points were close to the line for both of the plots, so the assumption of linearity was met.

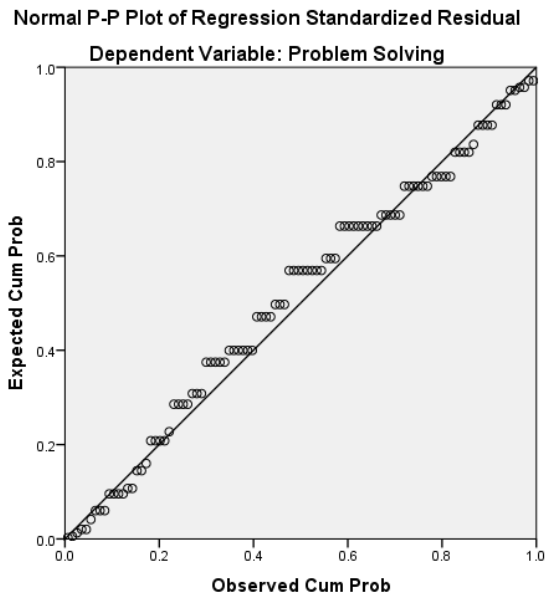


*Figure 2*. Normal P-P plot of residuals for DV of problem solving.

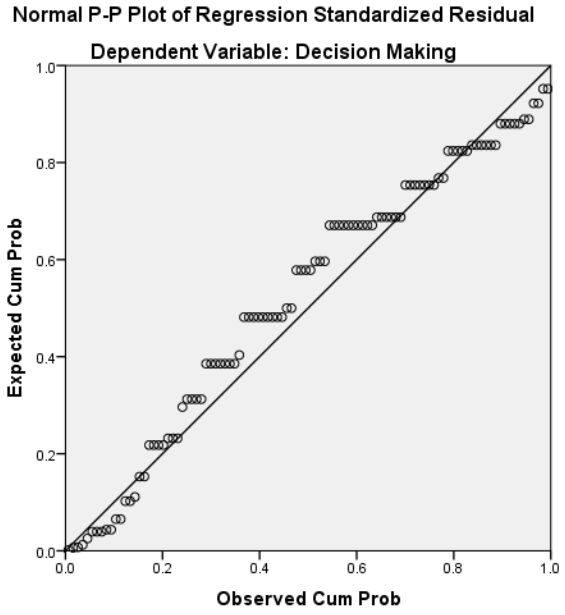


*Figure 3.* Normal P-P plot of residuals for DV of decision making.

Homoscedasticity was checked during the regression analysis with scatterplots of residuals and the Durbin-Watson test. The residual plots showed a good scatter, and the Durbin-Watson test was close in value to 2 for the simple regressions, with a Durbin-Watson value of 1.81 for simple regression for RQ1 and a Durbin-Watson value of 1.86 for the simple regression of RQ2. The plots of the standardized residuals for both simple regression analyses indicated a normally distributed set of errors on the histograms. Thus, the assumption of homoscedasticity was met.

## Hypothesis Testing

A total of 102 records were included in the inferential analyses. Two simple regression analyses were performed to address the RQs and associated statistical hypotheses. The simple regression analysis and findings, with conclusions related to each null hypothesis, are presented according to each RQ. The individual variable constructs

of the KAI tool were not used for hypothesis testing. Instead, the total KAI score was used to divide the sample of 102 participants into two groups according to the criteria described in Chapter 3. Specifically, the IV of cognitive style was derived from the total KAI score and delineated onto a derived variable of "KAI Group," with two groups of (a) adaption, which included 34 board members with a total KAI score between 32 and 95 inclusive, and (b) innovation, which included 68 board members with a total KAI score between 96 and 160 inclusive. The KAI Group variable was dichotomously coded, with adaption = 0 and innovation = 1. Thus, the adaption group was the referent in both of the regression models.

**Research Question 1**

RQ1: Does a nonprofit board member's cognitive style predict problem-solving outcomes?

$H_{01}$: A nonprofit board member's cognitive style, as measured by the KAI Inventory, does not predict problem-solving outcomes, as measured by the NBPQ.

$H_{a1}$: A nonprofit board member's cognitive style, as measured by the KAI Inventory, predicts problem-solving outcomes, as measured by the NBPQ.

A simple linear regression was performed with the DV (criterion variable) of NBPQ: Problem solving and the IV (predictor variable) of KAI Group. The $R$ value for regression (.086) was not significantly different from zero, $F(1, 100) = 0.75$, $p = .390$, with $R^2$ of .007 (-.003 adjusted). Because the model was not statistically significant, further investigation of model coefficients was not performed (see Table 13). Null Hypothesis 1 is not rejected. There was not sufficient evidence to suggest that a nonprofit

board member's cognitive style, as measured by the KAI Inventory, predicts problem-solving outcomes, as measured by the NBPQ.

Table 13

*Summary Table of Simple Regression Model for RQ1*

| | *R* | $R^2$ | B | 95% CI for B | | Regression model |
|---|---|---|---|---|---|---|
| | | | | Lower control | Upper control | |
| RQ1 | .086 | .-.003 | -0.74 | -2.42 | 0.95 | PS = 13.03-0.74 (KAI group = Innovative) |

*Note.* PS = Problem solving

**Research Question 2**

RQ2: Does a nonprofit board member's cognitive style predict decision-making outcomes?

$H_{02}$: a nonprofit board member's cognitive style, as measured by the KAI Inventory, does not predict decision-making outcomes, as measured by the NBPQ.

$H_{a2}$: A nonprofit board member's cognitive style, as measured by the KAI Inventory, predicts decision-making outcomes, as measured by the NBPQ.

A simple linear regression was performed with the DV (criterion variable) of NBPQ: decision making and the IV (predictor variable) of KAI Group. The *R* value for regression (.206) was significantly different from zero, $F(1, 100) = 4.43$, $p = .038$, with $R^2$ of .042 (.033 adjusted). The adjusted $R^2$ value of .033 indicated that approximately 3% of the variability in the DV of decision making was predicted by the KAI Group variable. The KAI Group predictor was significant (B = -1.81, $t(100) = -2.10$, $p = .038$). The 95% confidence interval for the predictor coefficient of KAI Group was (-3.51, -0.10). The size and direction of the relationship between KAI Group and decision making suggested

that board members who were classified as innovative had NBPQ scores of approximately 2 points lower on decision making than board members who were classified as adaptive (see Table 14).

Table 14

*Summary Table of Simple Regression Model for RQ2*

| | *R* | $R^2$ | B | 95% CI for B | | Regression model |
|---|---|---|---|---|---|---|
| | | | | Lower control | Upper control | |
| RQ2 | .206 | .042 | -1.81 | -3.51 | -0.10 | DM = 13.61-1.81(KAI group = Innovative) |

*Note.* DM = Decision making

## Summary and Transition

Chapter 4 began with a description of the participants, followed by information about the instrumentation and variable constructs. Values of the two board types, namely, charitable and educational, did not vary greatly; however, a series of *t* tests checked the six derived constructs for statistical significance. Results showed that the means difference was not significant: therefore, a Type I error was not a concern. Correlation and reliability were investigated, and information pertaining to the required assumptions for the inferential analyses were presented and discussed. Inferential analyses were performed using simple linear regression analysis to address the two RQs and statistical hypotheses.

All inferential analyses were performed using SPSS v.22 and were set at a 95% level of significance. Regression results indicated that innovative board members scored significantly less on the decision making variable than board members who were classified as adaptive ($p = .038$). A Cronbach's alpha provided evidence of adequate

internal consistency reliability for the NBPQ. Assumptions were tested through a series of Pearson's correlations and two simple linear regression analyses. A check of boxplots found two outliners for problem solving and three outliers for decision making; however, all outliners were in acceptable ranges. Hypothesis testing derived the IV of cognitive style from the total KAI score in two groups of adaptive and innovative.

This study's qualitative analysis answered the RQs as follows: The linear regression performed on RQ1 showed the DV of problem solving and IV of the KAI Group model as not having statistical significance, thus accepting Null Hypothesis 1. For RQ2, approximately 3% of the variation of the DV of decision making was predicted by the IV of KAI Group. Therefore, Null Hypothesis 2 was rejected, and the suggestion was that board members scoring within the innovation range scored 2 points lower on the DV of decision making than members who scored within the adaptive range.

Chapter 5 concludes the study with discussions of the interpretation of the findings, implications, and limitations. Conclusions drawn from the findings and implications for board member type on problem-solving and decision-making skills also are included. A discussion of the benefits of the results, recommendations to board leadership based on the research, and recommendations for the future studies are addressed.

# Chapter 5: Discussion, Conclusions, and Recommendations

The intent of this study was to associate A-I theory with leading nonprofit organizations by exploring the relationship between variations in cognitive styles and problem-solving and decision-making outcomes on nonprofit board performance to determine whether the cognitive styles of nonprofit board leadership influenced their ability to facilitate members' problem-solving capacity and manage cognitive gaps to ensure organizational excellence. To determine whether there was a relationship between cognitive style and problem solving and decision making, the researcher used a convenience survey design by administering the NBPQ and KAI Inventory to examine the DVs (criterion variables) of problem solving and decision making in relationship to the IV (predictor variable) of cognitive style on nonprofit board performance outcomes. Nonprofit CEOs, executive directors/presidents, and members from charitable and educational nonprofit boards were asked to complete the instruments to measure these variables. Quantitative analysis was used to analyze the collected data.

This chapter provides a discussion of the results. First is an interpretation of each RQ's findings. Second are descriptions of the implications of the findings in relationship to theoretical and practical methodologies. Third is an explanation of the limitations encountered in the execution of this study, recommendations for future research, and implications for social change to leverage a deeper understanding of the strengths of adaption and innovation styles to improve board performance in the pursuit of excellence.

## Interpretation of the Findings

The board members who participated in this study contributed to either charitable or educational organizations. The mean score for all participants was 49.3 years, with a standard deviation of 13.1 years. The sample comprised 102 nonprofit board members who ranged in age from 28 to 81 years. Charitable organizations were represented by 82 board members, and 20 participants were from educational organizations. The ages of participating board members from charitable organizations were consistent with the total sample range of 28 to 81, with a mean of 49.3 and a standard deviation of 13.3 years. However, educational organization participants had a range of 30 to 75 years ($M$ = 46.6, $SD$ = 12.3 years).

The sample produced a gender split of 48% women to 52% men for all participants. Charitable organizations showed an even distribution of 50% women to 50% men; educational organizations showed a gender difference of 40% women to 60% men. Overall 81.4% of participants reported holding a bachelor's degree or higher as their highest level of education. Demographic data indicated that 28.1% of board members in charitable organizations reported having a bachelor's degree as their highest level of education, and participants from educational organizations reported a considerably higher percentage (60%), holding a bachelor's degree as their highest level of education. The participants were diverse in terms of age, gender, and education.

Gazley and Bowers (2013) pointed out that boards with higher levels of diversity enjoyed minor gains in internal accountability and overall strategic performance; however, diversity brought challenges to interpersonal relationships between board

members and staff. The more education and personal development included in board training, the more benefits boards experienced in strategic performance (Gazley & Bowers, 2013). In addition, this study's sample board size and members' roles provided reasonable diversity for studying performance on nonprofit boards. For example, 91.2% of participants served on boards with one to 20 members. High-performance boards fell into the range of 13 to 20. In addition, 57.8% of participants served as members, with 31.4% holding the position of executive director or president. According to Gazley and Bowers (2013), "Boards of 16-20 members were most likely to perform development activities, and less likely to report high staff turnover" (p. 47).

Two RQs were developed to examine the influence of cognitive style on problem solving and decision making in relation to nonprofit board performance. RQ1 asked whether a nonprofit board member's score on the KAI Inventory predicted problem-solving outcomes in relationship to board performance. Analysis of problem solving and the KAI Group identifiers of adaption and innovation did not show statistical significance. There was no evidence that a nonprofit board member's KAI Inventory score predicted problem-solving ability on the NBPQ.

RQ2 asked whether a nonprofit board member's score on the KAI Inventory predicted decision-making outcomes in relationship to board performance. The analysis indicated that decision making was predicted by the cognitive style characteristics of adaption and innovation. The size and direction of the relationship between KAI scores and decision making suggested that board members with higher innovation scores

provided lower scores on decision-making questions on the NBPQ than members who scored high on the adaption continuum.

It is important to note that although the two variable constructs of problem solving and decision making were highly intercorrelated on the Pearson's product-moment correlation matrix, only the variable of decision making showed significance. The explanation for this statistical variance began with the initial coefficients of problem solving (-.86) and decision making (-.206), which showed little correlation. However, when the KAI Group predictors were introduced, the correlation coefficient of $r = .815$ suggested that the two DVs of problem solving and decision making were strongly and positively correlated. Furthermore, although the NBPQ problem-solving variable showed no difference in relationship to the KAI Group, the weak and negative correlation suggested by the KAI group and the NBPQ decision-making variable implied an association with decreases in innovative members' decision-making scores.

## Implications

Results of the study have theoretical and practical implications. This section includes the theoretical implications of not only the archival information in the ASAE studies but also the extensive research available on A-I theory. In addition, practical implications are presented from the perspective of creating a deeper understanding of the relationship among cognitive style, problem solving, and decision making related to nonprofit board performance and the pursuit of excellence.

**Theoretical Implications**

The researcher used the results of two ASAE studies to examine the cognitive styles of nonprofit board members and create a baseline for the application of these individual cognitive styles in relationship to problem solving and decision making. The theoretical framework for this study was Kirton's (1976) A-I theory, which established the foundation for correlating adaption and innovation cognitive styles to problem solving and decision making on nonprofit boards. The first theoretical implication was that the A-I theory classification of adaption and innovation cognitive style was not a significant predictor of the participants' problem-solving ability, as measured by their answers on the NBPQ. This dynamic might be explained through the A-I theory as an outcome of the definitions of the differentials on a KAI continuum displaying high adaption (need to work within structure) to high innovation (preference to work outside of structure; Kirton, 1976) because the performance questions on the NBPQ in relationship to problem solving were all associated with organizationally structured planning documents, policies, events, functions, and specific issues. Therefore, latitude for cognitive styles with preferences to work outside the current structure was diminished, which required coping skills.

According to Kirton (2011),

> All individuals indulge in coping behavior because of the narrowness of the range of style within which they feel fully at ease, compared with the wide range of style needed to manage the usual array of diverse problems the individual needs to solve. (p. 254)

Kirton's (2011) explanation was especially relevant to the sample in this study because of the continuum established by the 102 individual KAI scores collected. The KAI Inventory distinguishes cognitive style differences on a scale ranging from highly adaptive (32) to highly innovative (160; Kirton, 1999). Cognitive style is further calculated at a range of 45 for highly adaptive and 145 for highly innovative, with a mean of approximately 95 with occupational status and other determinants considered (Kirton, 1999). For example, nurses and secretaries score in a range of 91 to 92; teachers score in a range of 93 to 97; military officers score in a range of 95 to 97; research and development managers score in a range of 101 to 103; and marketing, finance, and planning personnel score in a range of 104 to 110 (Kirton, 2011).

The KAI scores for the 102 participants in the current study showed a range of adaption scores of 63 to 95 ($n$ = 45) and a range of innovation scores of 96 to 145 ($n$ = 57). The average KAI score for the total sample was 105, which indicated a more innovative group relative to Kirton's (2011) stated median of 95.33. Kirton (1985) showed a median of 95 (98 for men and 91 for women) after extensive testing on large target populations with language and cultural differences.

Therefore, because men traditionally score more innovative than women on the KAI, and because this study's sample had a gender split of 48% women to 52% men, the higher innovative mean of 105 was expected. This result was further validated by the assertion that scores less than 45 and more than 145 require further examination; in this sample, the range of 63 to 145 was within the norm (Kirton, 2011). However, it is important to point out that although the additional demographics of age (28-81 years) and

education (81.4% holding a bachelor's degree or higher) showed diversity, they were not indicators of an individual's adaption or innovation preference score. Stum (2009) cited Buttner and Gryskiewicz's explanation that in A-I theory, "the individual's problem-solving style does not change over time or with age" (p. 69). Kirton (2003) described the dynamic that even though all individuals can operate outside of their preferred styles as a coping mechanism, they will ultimately return to their natural preferences.

The second theoretical implication was the conclusion that board members in this sample with an innovation cognitive style answered the decision-making performance questions approximately 2 points lower than members who had an adaptive cognitive style. In support of this finding, Kirton (1985) offered conclusions about high innovators that might explain this dynamic: High innovators "tend to reject generally accepted perception of problems, and redefine them. Their view of the problem may be hard to get across" (Kirton, as cited in Foxall & Hackett, 1994, p. 86). Therefore, because high innovators prefer doing things differently, their responses to the decision-making question would be different (Kirton, 1976). A-I theory supports a decision-making style that has a high correlation to learning and personality styles within the realm of cognitive style research for practical application (Kozhevnikov, 2007).

**Practical Implications**

The practical implications of this study are best presented in an examination of key indicator comparisons. The two archival studies that served as the baseline for this study (Dignam &Tenuta, 2015; Gazley & Bowers, 2013) are compared to the sample in the current study in regard to board size using the three member groups of three to 12, 13

to 20, and 21 or more. Dignam and Tenuta (2015) found a linear relationship between board size and performance ratings (i.e., as board membership increased, membership performance perception decreased) and defined high-performance board membership as 17 to 20 members. Gazley and Bowers (2013) associated high-performance board membership as 12 to 20 members, stating "There is no clear advantage between boards of 12-15 members compared to boards with 16-20, but both have advantages over larger and smaller boards" (p. 47). The implications of the sample used in the current study were aligned with the 13- to 20-member group, which was associated the most closely to high-performance membership ranges. Table 15 shows the comparative values of the three member groups.

Table 15

*Board Size Comparison*

| Comparisons of studies | Member % 3-12 | Member % 13-20 | Member % 21 or more |
|---|---|---|---|
| NBPQ | 49 | 42 | 9 |
| Dignam & Tenuta (2015) | 31 | 47 | 23 |
| Gazley & Bowers (2013) | 27 | 47 | 26 |

The second comparative analysis relevant to practical implications of this study was the comparison of scores on nonprofit board performance in relationship to problem solving. According to Kirton (2011), "To collaborate with others in problem solving, an individual requires some understanding of self and of others and a means to communicate" (p. 208). In addition, understanding the gap in cognitive styles in the organizational context is essential to manage individuals' preferences in relationship to improving organizational outcomes (Kirton, 1977). Table 16 displays the comparative scores of the current study's total sample on the NBPQ questions related to problem

solving to the total scores on Dignam and Tenuta's (2015) study. Most scores were within a similar range, except for the difference in scores on "reviewing its committee structure to ensure it supports the work of the board" (.64) and "planning of board officer succession" (.58).

Table 16

*Board Performance Comparison: Problem Solving*

| RQ1: Does a nonprofit board member's cognitive style predict problem-solving outcomes? | Dignam & Tenuta respondents | NBPQ respondents |
|---|---|---|
| 1. Articulating a vision that is distinct from the mission. | 2.61 | 2.8 |
| 2. Tracking progress toward meeting the association's strategic goals. | 2.87 | 2.8 |
| 3. Planning of board officer succession. | 2.48 | 1.9 |
| 4. Reviewing its committee structure to ensure it supports the work of the board. | 3.14 | 2.5 |
| 5. Focusing regularly on strategic and policy issues versus operational issues. | 2.63 | 2.6 |

*Note.* From "Assessing board performance: An analysis of ASAE-BoardSource board self-assessment results," by M. Dignam and R. Tenuta, 2015, ASAE Foundation, Washington, DC. From the ASAE-BoardSource *Board Self-Assessment for Associations,* copyright 2019-2017 ASAE and BoardSource. Reprinted with permission.

The third practical implication of the comparative analysis relevant to this study was the comparison of scores on nonprofit board performance in relationship to decision making. Kirton (2011) provided insight into the dynamics of cognitive diversity by clarifying that even though A-I theory underscores individual preferences for problem solving, the interactions between and among individuals with diverse cognitive styles in their decision making are what is essential. When individuals understand their own cognitive preferences and appreciate differences in their colleagues' cognitive preferences in the work group, the less stress the work group experiences and the more often individual preferences can be used to increase productivity (Kirton, 2011). Table 17 depicts the nonprofit board performance comparisons related to decision making. The

comparison reflects two significant differences, particularly in Questions 6 “Using the association’s mission and values to drive decisions (.34) and 7 “Examining the board’s current composition and identifying gaps, e.g., in professional expertise, influence, ethnicity, age, gender (.26).

Table 17

*Board Performance Comparison: Decision Making*

| RQ2: Does a nonprofit board member’s cognitive style predict decision-making outcomes? | Dignam & Tenuta respondents | NBPQ respondents |
|---|---|---|
| 6. Using the association’s mission and values to drive decisions. | 2.86 | 3.2 |
| 7. Engaging in an effective strategic planning process. | 2.82 | 2.8 |
| 8. Examining the board’s current composition and identifying gaps, e.g., in professional expertise, influence, ethnicity, age, gender. | 2.76 | 2.5 |
| 9. Identifying standards against which to measure organizational performance e.g., industry benchmarks, competitors or peers. | 2.53 | 2.5 |
| 10. Efficiently making decisions and taking action when needed. | 3.10 | 3.0 |

*Note.* From “Assessing board performance: An analysis of ASAE-BoardSource board self-assessment results,” by M. Dignam and R. Tenuta, 2015, ASAE Foundation, Washington, DC. From the ASAE-BoardSource *Board Self-Assessment for Associations,* copyright 2019-2017 ASAE and BoardSource. Reprinted with permission.

The final comparison to illustrate the practical application is the board performance survey response comparison. Figure 4 illustrates the comparison of the responses in Dignam and Tenuta’s (2015) study to the collective responses for all the participants in the current study. The following areas for improvement efforts specific to this study’s sample are as follows:

- PS-3: Planning of board officer succession (Q3).
- DM-8: Examining the board’s current composition and identifying gaps, e.g., in professional expertise, influence, ethnicity, age, gender (Q8).

- PS-4: Reviewing its committee structure to ensure it supports the work of the board (Q4).

These areas of improvement are related to an effective strategic planning process. Therefore, the boards represented in this study would benefit from a strategic planning offsite that provides an environment and an opportunity for board members to develop an effective plan and an organizational performance measurement methodology collectively to ensure organizational excellence.

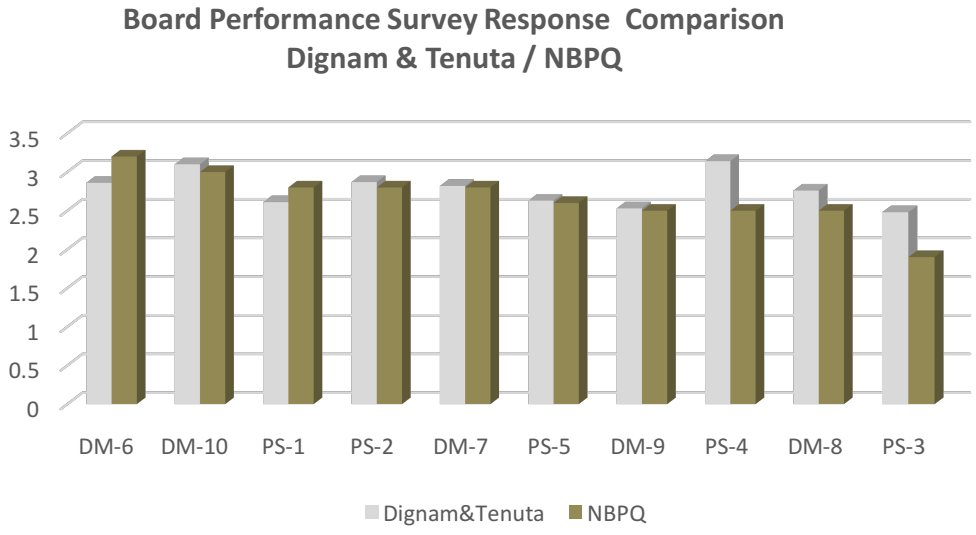


*Figure 4.* Board performance survey response comparison: Problem solving versus decision making.

## Limitations of the Study

The limitations of this study were consistent with those outlined in Chapter 1, which included board choice, data collection process, and coping skills. Data collection was the primary limitation of this study. This limitation was introduced through a personnel change in the Research Department and the leadership of ASAE changing the

rules on board choice. Although the initial ASAE representative was proactive and open to sharing information and data, a year later, as the data collection phase began, different personnel followed a different policy. The new policy did not provide the researcher with access to the 75 board CEOs in Dignam and Tenuta's (2015) study. Board choice was further limited through the need to use the publicly available resources of the IRS EO BMF, GuideStar, Exact Data, and Dunhill International List Company, Inc.

Data collection through these venues presented a challenge to maintain the initial criteria to ensure a homogeneous sample of board size of 17 to 20 members; 501(c)(3) tax status (charitable, educational, and scientific); and single organizations with no affiliates, chapters, or sections. E-mailing invitations to CEOs to invite their boards to participate produced only 11 boards with three to 16 members on each, for a total of 52 participants. To meet the sample size, invitations were sent to individual board members through lists acquired through Dunhill International List Company, Inc.

An additional limitation to data collection was the need for participants to complete two instruments: The NBPQ directly followed the informed consent verification in SurveyMonkey and consisted of 10 questions; the KAI Inventory was disidentified, with instructions sent separately and scored on a secure KAI Centre website. This process resulted in 163 participants completing the NBPQ and a total of 102 board members completing both instruments. These limitations resulted in a sample of convenience, which made generalizing the sample to the target population of all boards challenging.

In addition, the theorized limitation of not knowing the climate of the boards from the relationships already established by the CEOs and executive directors/presidents or

the interpersonal relationships of the members of this sample did not affect the findings or implications of this study. According to Kirton (2011), this cultural dynamic could have resulted in individual anxieties affecting the usability of the KAI Inventory, but this dynamic did not limit the findings.

## Recommendations

The results will help to fill the gap in the literature regarding the use of Kirton's (1976) A-I theory in nonprofit organizations. However, more research on nonprofit board member cognitive preferences in relationship to improving problem solving and decision making would increase individual and organizational outcomes. Therefore, I recommend that future studies include larger sample sizes, focus exclusively on homogeneous boards within the high-performance range of 13 to 20 members, and evaluate each board's answers to performance questions and scores on the KAI Inventory on a continuum ranging from adaption to innovation.

In this way, individuals' cognitive styles will be associated with overall board performance by understanding their areas of strengths and areas that need improvement. The individual members' KAI scores displayed on a continuum would identify cognitive gaps requiring attention. As Kirton (1999) pointed out, it is important to understand that a 10-point KAI score difference is noticeable between two people and a 20+ difference in points on the KAI score requires effort between the two people to ensure understanding and mutual respect. Managing these gaps also requires coping behaviors to form effective teams (Kirton, 1999). Researchers engaged in similar studies would further increase the

effectiveness of nonprofit boards, thus enhancing their diverse missions to benefit society in substantial ways.

## Implications for Positive Social Change

This study's use of A-I theory to examined the influence of cognitive styles on problem solving and decision making in high-performance nonprofit organizations had and will continue to have a broad range of implications for positive social change (Kirton, 2011). The study created a baseline of the unique climate associated with nonprofit board membership and offered insight into several strategic benefits. Evaluating members' perceptions of board performance and gaining a deeper understanding of the ways that diverse cognitive styles enhance individual learning and personal and professional growth would change in today's organizational environment.

This research identified several practical applications to support nonprofit board leaders in improving working relationships by helping them to understand the strengths and weaknesses of members relevant to adaption and innovation styles. This understanding has the potential to accelerate organizational change through open dialogue, mutual respect, and an appreciation of the cognitive capacity of others while avoiding disruptive conflict that often blocks new initiatives and stifles productive change. This study and the recommendations for future research will assist nonprofit board leadership in learning to manage the cognitive gaps that can challenge interpersonal relationships and often impede the organizational search for excellence.

## Conclusion

The contribution of this study to the larger body of A-I theory knowledge matters. The process of correlating A-I theory to nonprofit boards through the examination of adaption and innovation (IVs) cognitive styles to the problem solving and decision making of board members will help nonprofit boards in their pursuit of excellence. First, the results showed that cognitive style was not a significant predictor of problem solving, as measured by the performance questions asked of the sample. Second, this study found that board members in this specific sample with an innovative cognitive style perceived answers to the decision-making performance questions by approximately 2 points lower than members who were classified as having an adaptive cognitive style. Lastly, the knowledge acquired from this study will benefit the leadership of nonprofit boards, their membership, and society by giving them a deeper understanding of how to better solve problems and make more effective decisions to overcome challenges in their intentional execution of excellence.

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Appendix A: Kirton Adaption-Innovation Certification

OCCUPATIONAL RESEARCH CENTRE

# REGISTER OF CERTIFICATED KAI USERS

*This is to certify that*

*Miriam G Michael*

*has undertaken the required training on the Kirton Adaption-Innovation Theory and Inventory and has been admitted to the Register of Certificated Users.*

Signed..... Michael Kirton
***M. J. Kirton DSc***

Certificated at ***Blacksburg, Virginia, USA***
on ***7th May 2015***

Valid until ***7th May 2018***

[redacted]

Occupational Research Centre, "Cornerways", Cardigan Street, Newmarket, Suffolk CB8 8HZ., UK

Appendix B: Nonprofit Board Performance Questionnaire (NBPQ)

**Instructions:** Please rate the performance of the nonprofit board you currently serve on in relationship to the following questions in context to problem solving, decision making using a 5-point scale:

0 = poor, 1 = fair, 2 = OK, 3 = good, and 4 = excellent

| | Nonprofit Board Performance Questionnaire (NBPQ) | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| | **Board Performance – Problem Solving** | | | | | |
| 1. | Articulation a vision that is distinct from the mission. | | | | | |
| 2. | Tracking progress towards meeting the association's strategic goals. | | | | | |
| 3. | Planning of board officer succession. | | | | | |
| 4. | Reviewing its committee structure to ensure it supports the work of the board. | | | | | |
| 5. | Focusing regularly on strategic and policy issues versus operational issues. | | | | | |
| | **Board Performance – Decision Making** | | | | | |
| 6. | Using the association's mission and values to drive decisions. | | | | | |
| 7. | Engaging in an effective strategic planning process. | | | | | |
| 8. | Examining the board's current composition and identifying gaps, e.g., in professional expertise, influence, ethnicity, age, gender. | | | | | |
| 9. | Identifying standards against which to measure organizational performance e.g., industry benchmarks, competitors or peers. | | | | | |
| 10. | Efficiently making decisions and taking action when needed. | | | | | |

*Note.* From "Assessing board performance: An analysis of ASAE-BoardSource board self-assessment results," by M. Dignam, and R. Tenuta, 2015, ASAE Foundation, Washington, DC, Reprinted and used with permission. The questions in this instrument are excerpted and adapted by permission from *The Board Self-Assessment for Associations,* copyright 2011-2016 BoardSource and ASAE: The Center for Association Leadership.

Appendix C: Example Items of the KAI Inventory

**Directions:** Mark an "X" to signify how easy or difficult do you find it to present yourself, consistently, over a long period as:

| | Easy | Hard |
|---|---|---|
| 1. A person who likes to solve problems inductively ..... | | |
| 2. A person who likes to solve problems deductively ..... | | |

The Kirton's Adaption-Innovation Inventory (KAI) is a copyrighted questionnaire and used with permission.

For information regarding the KAI, please contact:

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