Education Dissertations   Education, School of

January 1st, 2017

Cognitive Style and Conflict on Superintendent-School Board Teams

Douglas J. Asbjornsen
Seattle Pacific University

Follow this and additional works at: https://digitalcommons.spu.edu/soe_etd

   Part of the Educational Administration and Supervision Commons, and the Educational Leadership Commons

Cognitive Style and Conflict on Superintendent-School Board Teams

by

Douglas J. Asbjornsen

Dissertation

Presented to the Faculty of the

Graduate School of Education at

Seattle Pacific University

In Partial Fulfillment of the Requirements for the

Doctor of Education Degree

Seattle Pacific University

June, 2017

Cognitive Style and Conflict on Superintendent-School Board Teams

by

Douglas J. Asbjornsen

A dissertation submitted in partial fulfillment

of the requirement of the degree of
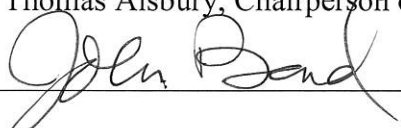
Doctor of Education

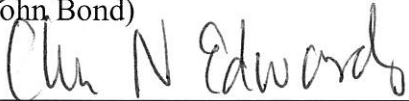Seattle Pacific University

2017

Approved by_____

(Dr. Thomas Alsbury, Chairperson of the Dissertation Committee)

_____

(Dr. John Bond)

_____

(Dr. Cher Edwards)

Program Authorized to Offer Degree: <u>School of Education</u>
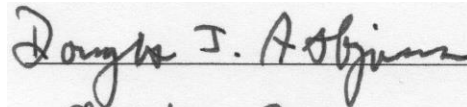
Date _____OCTOBER 2017_____

(Dr. Rick Eigenbrood, Dean, School of Education)

Copyright Page

In presenting this dissertation in partial fulfillment of the requirements for the

Doctoral degree at Seattle Pacific University, I agree that the library shall make its

copies freely available for inspection. I further agree that extensive copying of this

dissertation is allowable only for scholarly purposes, consistent with "fair use" as

prescribed in the U.S. Copyright Law. Requests for copying or reproduction of this

dissertation may be referred to University Microfilms, 1490 Eisenhower Place, P.O. Box

975, Ann Arbor, MI 48106, to whom the author has granted "the right to reproduce and

sell (a) copies of the manuscript in microfilm and/ or (b) printed copies of the

manuscript from microfilm."

Signature _____
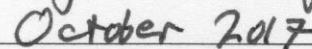
Date _____

Table of Contents

List of Tables

List of Figures

List of Appendices

Acknowledgements

I am blessed to have a wonderful family who has supported me through this dissertation journey. Susan, my wife and best friend for over four decades has been there with me, side by side, encouraging and inspiring me in both good and hard times. Without her love, patience, and encouragement, this work would never have even been started. To our grown children, their spouses, and my mother and father-in-law: Erik and Andi, Amy and Joel, Kelsey and Bryant, and Ron and Dolores, thank you. Your love and support are so appreciated and makes all the difference in my life. Thank you to our eight grandchildren. As I watch and interact with them, I am constantly reminded of why I went into public education in the first place. Their love, joy of learning, and laughter continue to motivate me to make a difference in the lives of young people.

The quality of education I received at Seattle Pacific University, both while earning my superintendent's certificate and completing my doctoral program was superb. This experience was positively impacted by many outstanding professors and wonderful classmates. I cannot give enough thanks to Dr. Thomas Alsbury, my dissertation committee chair. His expertise and skill, along with his thoughtful guidance throughout this work were invaluable. My other committee members, Dr. John Bond and Dr. Cher Edwards, each contributed a different perspective for which I am extremely grateful. Thank you to you all.

Finally, I want to thank Jesus Christ, my Lord and Savior; to Him goes the glory. Throughout this journey, my desire was to be aligned to the words of the prophet Micah. That is, "And What does the Lord require of you? To act justly and to love mercy and to walk humbly with your God" (Micah 6:8).

Seattle Pacific University

Abstract

Cognitive Style and Conflict on Superintendent-School Board Teams

By Douglas J. Asbjornsen

Chairperson of the Dissertation Committee: Dr. Thomas Alsbury

                      School of Education

Quality learning and high student achievement are primary goals of K-12 public school education. Superintendent-School Board teams can have a positive impact on both. Collaboration is critical to these teams' effectiveness and efficiency. Research has suggested conflict can have a negative impact on collaboration and may be related to the diversity on the team. One type of diversity is cognitive diversity within the construct of cognitive style, as defined by the Kirton Adaption-Innovation Theory (A-I Theory). In alignment with this theory, the Kirton Adaption-Innovation Inventory (KAI) was designed to measure where one falls on a continuum of cognitive style. The difference between individual scores of team members is defined as cognitive gap. A-I Theory posits that at significant levels, cognitive gap can contribute to conflict. Using a mixed-method, explanatory participation selection design, this study identified and documented examples where cognitive gap has likely contributed to conflict within superintendent-school board team members. In addition, findings suggest a relationship may exist between superintendent KAI scores and their age. This study introduces cognitive gap as a possible contributor to conflict not currently documented in the education literature focusing on superintendent-school board teams. Knowledge of A-I Theory and KAI

scores may help prevent or mitigate certain types of conflict on these teams, which may have positive impact on student learning and achievement.

Chapter 1

Introduction

The Superintendent-School Board Team

The school district governance team, made up of the superintendent and school board, plays a critical role in the successful operation of a school district which ultimately can impact student achievement (Alsbury, 2003, 2008a, 2008b; Alsbury & Gore, 2015; Delagardelle, 2008; Iowa Association of School Boards [IASB], 2000; Lorentzen, 2013; Waters & Marzano, 2006). Historically, given the indirect relationship of the superintendent-school board team to teaching and learning in the classroom, evidence for the governance team's influence on student performance is mostly related but not necessarily causal (Alsbury, 2003, 2008a; Alsbury & Gore, 2015; Delagardelle, 2008; Land, 2002). The effect of the superintendent-school board team on student achievement, although arguable in both its potential positive and negative impact, historically is supported by only a few empirical studies (Alsbury, 2003, 2008a; Alsbury & Gore, 2015; Delagardelle, 2008; Hess and Meeks, 2010; Land, 2002). Part of the problem with measuring a link between school boards and student performance is the distal relationship the governance team has to the teacher and student, especially in larger districts (Delagardelle, 2008). The plethora of intervening variables between the superintendent-school board team and the classroom is hard to control for, thus structuring an experimental or even quasi-experimental design to support some level of causality is almost impossible. However, correlational studies have shown a positive link between high functioning superintendent-school board teams and positive student achievement (Alsbury, 2003; Blasko, 2016; Delagardelle, 2008; Holman, 2016; Lorentzen 2013).

A number of governance models exist for superintendent-school board teams, each emphasizing different roles board members can play (Alsbury & Gore, 2015). Even though the basic roles of policy-making, budget development and oversight, and the hiring, supervision and evaluation of the superintendent are fairly universal in most governance models, beyond that, there can be a great deal of variance (Alsbury & Gore, 2015). What does seem to be clear however, is regardless of the governance model applied, studies support that when a board functions well as team, they can have a positive impact on student learning (Delagardelle, 2008; IASB, 2000).

Given the relationship between the superintendent-school board team and student achievement, a high functioning governance team seems not only desirable, but an essential element in the quest for American education to improve. Unfortunately, high functioning superintendent-school board teams are not the norm historically. Mountford (2008) stated, "Problems with boards and superintendents have persisted for the past 200 years" (p. 81). She went on to say, "This relationship has been notoriously characterized as tense and conflict laden, and largely because of this, board-superintendent teams today are often characterized as dysfunctional" (p. 81).

The potential causes of dysfunction and conflict on school district governance teams are many. Mountford listed historic tensions as confusion over roles and responsibilities, power struggles, questionable motives for board service, and equality of representation. She identified new sources as changes in philosophical orientation among new generations of board members, disparate beliefs and attitudes, increasing state and federal accountability, increasing resistance for service, and public apathy toward

education. This study introduces another possibility, that of differences in cognitive style between the superintendent and one or more board members.

Intra-group conflict. A great deal of research has taken place investigating the impact of conflict on intra-group relations and the ability of teams to perform effectively and efficiently in accomplishing their goals (De Dreu & Gelfand, 2008; Jehn et al., 2008). This research grew in sophistication through the years and identified a number of variables that can impact conflict. The majority of studies showed intra-group conflict to have a harmful influence on team cohesiveness, retention within the group, and accomplishment of task (Jehn & Mannix, 2001). However, the type of conflict, when the conflict exists in the life of the team, and at what level in the organization the conflict takes place, are variables that can impact the effects (Jehn & Mannix, 2001).

Three types of intra-group conflict consistently appear in the literature. They include relationship, process, and task conflict (Jehn et al., 2008; Jehn and Mannix, 2001). Relationship conflict has been defined as, "disagreements and incompatibilities among group members about issues that are not task related but that focus on personal issues" (Jehn et al., 2008, p. 180). Within a team, relationship conflict is consistently shown to have a negative impact on cohesiveness and performance (Amason, 1996; Jehn & Mannix, 2001). Process conflict is "about logistical and delegation issues such as how task accomplishment should proceed in the work unit, who is responsible for what and how things should be delegated" (Jehn et al., 2008, p. 181). Like relationship conflict, process conflict usually has a negative impact on performance and satisfaction within the group. Task conflict focuses on content related issues and can also have a negative impact on team performance. However, if a trust base is established and positive working

protocols are in place on the team, task conflict can have a positive impact on its effectiveness (Jehn et al., 2008; Jehn & Mannix, 2001).

Regardless of the source and type of conflict, all intra-group conflict is driven by the differences inherent in the team. When two or more people attempt to work together, these differences or *elements of diversity* are present.

Diversity on teams. The term diversity can mean many things to many people. Even though one can find a number of definitions, most encompass the word "different." Using this most basic definition, every superintendent-school board team has some elements of diversity. Regardless if the board is not racially, gender, or age diverse, any team of two or more people are diverse in that no two people are the same. Each one brings to the table "differences." These differences can enhance or hinder the team's performance, depending upon how the diversity is managed (Kirton, 1976, 2000, 2003).

In focusing on human beings, these differences can take many shapes and forms. From the color of our skin and our gender to our unique experiences and ideas, these attributes can and do impact us in a multitude of ways. This impact can help or hinder, both individually and collectively. In the study of group dynamics, the research is mixed on the impact diversity has on intra-group conflict and a team's performance. There is support in the literature for diversity positively impacting problem solving capacity, due to differing perspectives, knowledge, and skills (Polzer, Milton, & Swann, 2002). On the other hand, the recognition and emphasis on diversity can often lead to conflict (Jehn et al., 2008).

Often, diversity is defined by demographic characteristics, such as ethnicity and/or gender. This definition of *identity diversity* (Hong & Page, 2004) or *social*

diversity (Jehn et al., 2008) can be limiting, to both the team and the individual. Certainly, ethnic and gender representation are important in the social justice arena, especially in assuring "voice" and in establishing role models and creating hope. However, ethnic and gender diversity are often assumed to offer diversity of thought. This is a questionable assumption and may be a simplistic and even disrespectful presumption, characterizing the complexity of each individual within a singular demographic category. Consequently, some research has begun to expand the concept of diverse team representation by proposing that each individual brings a diversity of thought; a concept far more complex than dichotomous classifications. For example, it is possible two individuals who are the same gender and/or same ethnicity may think relatively alike. However, it is also possible and more likely they do not due to multiple variables. Assuming either one or the other based upon ethnicity or gender is a slippery slope.

Some believe, diversity and the value of its power to help solve complex problems should be viewed as diversity of thought or *functional diversity* (Hong & Page, 2004). In contrast to identity diversity, *functional diversity* has been defined as, the "differences in how people represent problems and how they go about solving them" (Hong & Page, 2004, p. 16385).

Cognitive style. Functional diversity or diversity of thought in the context of this study is related to cognitive style. Cognitive style has been defined in a number of ways throughout the literature as the construct is fairly broad. In this study, cognitive style will be operationally defined as the style of problem solving as outlined by the Kirton

Adaption-Innovation Theory (A-I Theory) and measured by the Kirton Adaption

Innovation Inventory (KAI) (Kirton, 1976, 2000, 2003).

Under the right conditions, groups made up of people with diversity of thought

(problem solving style) have greater potential to solve an array of complex problems

(Hong & Page, 2004; Polzer et al., 2002). However, this diversity is harder to lead and

manage and can often lead to intra-group conflict. In highly diverse teams, members

often do not appreciate and understand other people who "think differently" and the value

they can bring to the problem-solving process. In many cases, these different thinkers

could be perceived as ignorant, stupid, troublemakers, resistant to change, etc. This can

lead not only to internal turmoil, but may also result in *diverse thinkers* leaving the group

(Kirton, 1976, 2000, 2003). Even though addressing this problem is hard, "Managing

wide arrays of cognitive styles is becoming a necessity for leaders within rapidly

changing and diversifying organizational climate" (Stum, 2009, p. 75). Jacobson (1993)

noted, "An understanding of cognitive style could facilitate more effective working

relationships by explaining what otherwise might be perceived as random variations in

human behavior" (p. 1131). The Adaption-Innovation Theory (A-I Theory) and the

Kirton Adaption-Innovation Inventory (KAI) address the issue of functional diversity and

complex problem solving within groups.

Kirton Adaption-Innovation Theory

Dr. Michael Kirton introduced the Kirton Adaption-Innovation Theory (A-I

Theory) and Kirton Adaption-Innovation Inventory (KAI) in 1976 (Kirton, 1976, 2000,

2003). It is based upon his prior qualitative research starting in 1961 where he

investigated the change processes in selected businesses in England. From his

observations and studying artifacts related to these processes, he concluded people may not be as resistant to change as commonly thought. Instead, how the change takes place in relation to one's cognitive style may be more of an issue. Since change is often an attempt to solve a problem, the structure (or lack of) becomes a factor related to one's preference for structure (Kirton, 1976, 2000, 2003).

A-I Theory is based upon the construct of cognitive style. Cognitive style has many definitions in the literature, but all are related to thinking processes. Kirton described cognitive style as, "mental processes underlying problem solving, decision making, and creativity" (Kirton, 2000, p. xxvii). It is the "degree of structure a person is comfortable with when problem solving or thinking in general" (Kirton, 2000, p. xxix). A-I Theory posits cognitive diversity can be both an asset or a hindrance to problem solving. Diverse thought can enhance the creativity of a team, creating a synergy to analyze problems and develop solutions from multiple perspectives. At the same time, diversity can be extremely hard to manage. If not managed well, it can lead to conflict, suboptimal performance, and possibly result in team members leaving (Kirton, 1976, 2000, 2003).

A-I Theory "is a model of problem solving and creativity, which aims to increase collaboration and reduce conflict in groups" (Kirton, 2003, p. i). In accordance with the theory, all people are creative and all people solve problems. However, how they prefer to go about solving problems can be different than others on the team. Cognitive gap is the difference in cognitive style between team members. At extreme levels, cognitive gap can be a contributor to conflict. Understanding one's own style and that of others can

possibly mitigate conflict or even prevent it from happening, thus leveraging the cognitive diversity to enhance problem solving capacity (Kirton, 1976, 2000, 2003).

In Kirton's bipolar theory, all people are located someplace on a continuum between pure adaptor and pure innovator. Adaptors are comfortable working within guidelines and prefer structure. They like to know what is expected of them and can be highly focused on the details of a task. They typically get along well with people and are good collaborators. In brainstorming, an adaptor will generate a few solutions to a problem. Typically, each solution is well thought out, practical, and can be implemented. Adaptors are highly effective in knowing the system and improving upon it. They prefer to *do things better* (Kirton, 1976, 2000, 2003).

Innovators prefer working outside of the system. They are often referred to as idea people and prefer focusing on the big picture instead of the details. They work best in less structured environments. Often structure and rules are perceived as hindrances to ideas and getting things done. This can lead to them being perceived as brash or rude. In brainstorming, innovators can come up quickly with many ideas. Sometimes only a few of these ideas may be practical and can be implemented. This typically does not bother the innovator, as he or she is comfortable with the attrition of ideas. Innovators prefer working outside of the system. They prefer to *do things differently* (Kirton, 1976, 2000, 2003).

Kirton emphasized both adapters and innovators are important in a group, depending upon the task. He also emphasized both adaptors and innovators can be equally creative, since the terms refer to style, not capacity. As style is closely related to personality type, it does not change over time or with training (Kirton, 1976, 2000, 2003).

Kirton Adaption-Innovation Inventory. To put the theory into practice and to
have a useful tool to help better appreciate and understand one's own style and the style
of others, Kirton developed the Kirton Adaption-Innovation Inventory (KAI). The
inventory develops a quantitative score that can be used to identify cognitive gap(s)
between team members and between teams. As the thesis of this paper posits, a
relationship exists between cognitive gap and conflict and miscommunication, thus
impacting problem-solving capacity.

Problem Statement

Research has linked superintendent-school board teams with student achievement
(Alsbury, 2003, 2008a, 2008b; Alsbury & Gore, 2015; Delagardelle, 2008; Lorentzen,
2013; Holmen, 2016; IASB, 2000; Shelton, 2010, Waters & Marzano, 2006). The impact
on student achievement, positive or negative, is related to how well the superintendent-
school board team functions (Alsbury 2008a, 2008b; Mountford, 2008). One component
of a high functioning superintendent-school board team is the level of collaboration on
the team and the management of intra-group conflict (Van Deuren, Evert, & Lang, 2016).
The types and level of conflict can be associated with many variables, including the
amount of diversity within the team (Amason, 1996; Kirton, 1976). One type of diversity
is related to cognitive style, specifically as it relates to show how one approaches
problem solving. According to the Kirton Adaption-Innovation Theory (A-I Theory), a
20-point cognitive gap in scores on the Kirton Adaption-Innovation Inventory (KAI)
between one or more team members is a predictor of conflict. This conflict, if not
managed well, has been shown to have a negative relationship with the performance of a

team in accomplishing its tasks and effectively fulfilling its mission (Kirton, 1976, 2000, 2003).

Although the KAI is strong in validity and reliability and has been a part of over 300 studies involving business, the military, and higher education, it has not been used in research on superintendent-school board teams (Kirton, 2013). This is a problem in that the theory and inventory are essentially unknown, or at best, underutilized in this context. This study starts to bridge the void in the literature and introduce A-I Theory and the KAI to superintendent-school board teams in eastern Washington State.

Purpose of the Study

The purpose of this mixed-method study was to use A-I Theory in the context of superintendent-school board teams in eastern Washington State. Specifically, the goal was to seek out cases of superintendent-school board team conflict where cognitive gap may have been a contributor. This study documents examples where the knowledge of A-I Theory and individual KAI scores may help explain the source of the conflict. These examples supporting the existence of cognitive style and more specifically, cognitive gap, contributing to conflict could lead to another tool that can be used for conflict prevention or mitigation.

Through quantitative analysis of the KAI scores of superintendents and selected school board members, evidence for the application of the A-I Theory was examined. Qualitative methodology was used to explore the influence of cognitive style on intra-group conflict within superintendent-school board teams. For this study, in accordance with A-I Theory, cognitive style is defined as the preferred style with which the individual undertakes problem-solving (Kirton, 2013). Intra-group conflict is defined as

the process emerging from perceived incompatibilities or differences among group members (De Dreu & Gelfand, 2008).

Research Questions

In this study, A-I Theory was applied and tested in the context of superintendent-school board teams. Two research questions were explored. They were:

1. On superintendent-school board teams where conflict has or does exist, is there evidence of a cognitive gap, as defined by A-I Theory, as a contributing factor?

2. Is there a significant relationship between superintendent KAI scores and their age and level of experience?

Hypotheses. The primary focus of this study used qualitative methodology and was designed to identify and collect stories of conflict on superintendent-school board teams where cognitive gap may have been a likely contributor. A secondary focus used quantitative methodology to examine A-I Theory in the context of superintendent-school board teams. The quantitative analysis hypothesis follows:

Hypothesis 1: There is no relationship between superintendent KAI scores and their demographics of age and level of experience.

Null Hypothesis 1: There is a significant relationship between superintendent KAI scores and their demographics of age and level of experience.

Research Design and Methodology

The research design for this study was a mixed method approach. Specifically, a sequential explanatory process was used and conducted in two phases (Creswell & Plano Clark, 2006). Phase One was a partial replication of Christopher Finch's dissertation, The

Rebel Leader (2013). In his mixed method study, he administered the Kirton Adaption-Innovation Inventory to 123 suburban superintendents in the greater Chicago area. He also had the participants complete a questionnaire asking demographic information. From this data, he presented descriptive statistics and reported on correlations between the scores and various demographic categories (which none were statistically significant). The second phase of his study was a Case Study approach (Creswell, 2013) where he interviewed 10 superintendents, representing the middle and extreme scores on the KAI continuum, specifically looking at ways they used coping mechanisms to mitigate the cognitive gap that existed between them and their district (assumed mean).

Phase One of this study partially replicated Finch's design. A sample of convenience was used to administer the KAI to 44 superintendents in eastern Washington State serving the 136 public school districts in this region. After a superintendent completed the KAI, a follow-up interview took place asking for additional demographic information and the existence of conflict on their superintendent-school board team. If conflict was identified, the likelihood cognitive gap may have been a contributor was explored. This interview information, along with individual superintendent KAI scores, were used to identify superintendent-school board teams for possible participation in Phase Two.

In Phase Two, three superintendent-school board teams were invited to participate. Due to the outlier nature of the superintendent's KAI score, these teams were predicted to have a high probability of an extreme cognitive gap (20 points or more) between the superintendent and one or more team members. On each of these teams, the superintendent had reported the existence of conflict. Based upon his or her

understanding of A-I Theory, cognitive gap was suspected as a possible contributor. The school directors on these teams were asked to complete the KAI. Individual follow-up phone interviews took place after their scores were compiled.

Population and sample. Participants for this study were superintendents and selected school board members who served in public school districts in eastern Washington State. Washington State is divided into two geographical areas, separated by the Cascade Mountains running north and south. Western Washington encompasses the metropolitan area of Seattle/Tacoma and most of the state's population resides on this side of the state. Except for Spokane and a few other small cities, eastern Washington is primarily rural with agriculture the major economic driver. Of the 295 school districts in Washington State, 136 school districts are in the eastern Washington region.

Washington State school districts are served by nine Educational School Districts (ESDs). These ESDs support districts in multiple ways from personnel and business services to providing professional development opportunities. Four of these ESDs are located in eastern Washington State. They are ESD 101, 105, 123, and 171. Within these four ESDs, seven superintendents serve in more than one district.

Superintendents supported by these four ESDs were the primary focus to participate in Phase One of this study. The goal was to collect 30 or more completed KAIs from superintendents. From these KAI scores and answers to the questions in the interviews, four superintendent-school board teams were invited to participate in Phase Two which included the completion of KAIs and participation in interviews by school board members.

Data collection & analysis methods. Statistical Package for the Social Sciences (SPSS) was used in the analysis of the quantitative data collected for this study. Descriptive statistics were generated for the continuous variables of KAI scores, age, the number of years the superintendent had served in his/her present district, the number of superintendent positions held, the total number of years the superintendent had served as a superintendent, as well as the total number of years he or she had served in a certificated position in public school education.

Along with descriptive statistics, superintendent KAI scores were analyzed with the variables listed above to explore relationships to answer Research Question Two. The Pearson Correlation Coefficient analysis was used for those variables that met parametric criteria. For the variables that did not meet parametric criteria, Kendall's tau and Spearman's rho were used for analysis.

Research Question Two tests a basic premise of A-I Theory which posits that cognitive style remains consistent over time and it is not influenced by age and experience (Kirton, 1976, 2000, 2003). Given a large enough sample, KAI scores should follow a normal distribution for each of the variables listed above. For example, according to A-I Theory, there should not be any significant correlation between KAI scores and age of superintendent. The KAI score of a relatively young superintendent is just as likely to be highly adaptive or highly innovative as an older superintendent.

In this study, KAI scores, superintendent's age, and total number of years the superintendent had served in public education met parametric criteria. A Pearson's Correlation Coefficient analysis was run looking for relationships between KAI scores and these two variables. Significance was set at .05 probability using a two-tailed test.

The number of years the superintendent had served in his/her present district, the number of superintendent positions held, and the total number of years the superintendent had served as a superintendent, did not meet parametric parameters. The Kendell's tau and Spearman's rho analysis were used to explore relationships between KAI scores and these variables. Significance was set at .05 using a two-tailed test.

Limitations of the Study

There are multiple limitations to this study. First, a sample of convenience restricts any significant generalizability. Although the quantitative component will add to the data base of superintendent KAI scores and start a data base of the KAI scores of school directors, this sample leaned heavily towards small, rural school districts and their governance teams due to the geographic area focused upon.

Another limitation is the nature of the instrument itself. Even though the Kirton Adaption-Innovation Inventory is well documented as both a valid and reliable psychometric instrument, it is only as accurate as each participant's answers. As with any self-reporting instrument, a number of threats to internal validity exist including the participants' honesty and accuracy in answering the questions. A multitude of other variables can also come into play, including the participant's understanding of the questions to his or her mood and alertness at the time the inventory is administered.

A third limitation is the superintendent's and board member's understanding of A-I Theory and their ability to identify current or past conflicts that may be related to cognitive gap. Conflict is a complicated construct, with different sources and types of conflict often overlapping. It is highly unlikely cognitive gap was the only source of conflict identified in any particular case. Thus, the proportion that it may be currently or

have contributed to the identified conflict is only an estimate by the participant and researcher.

The fourth limitation is related to the nature and uniqueness of each superintendent-school board team. The contribution of cognitive gap to conflict often does not become apparent unless the team is pressurized or put under stress due to the urgency of timelines, complexity of the problem(s) to be solved, the level of impact of poor decisions, etc. Even then, one may or may not observe indicators of cognitive gap contributing to conflict if the team has developed strict protocols of civility and has worked together for a long period of time with established high levels of trust. These variables can make an observation format for this study difficult. Unless one "stumbles" across a conflict in process, the likelihood of actually observing cognitive gap contributing to the conflict could require countless hours of observing school board meetings.

Even though the limitations are many and should be considered in evaluating the efficacy of this study, the findings are still valuable and add to the literature of superintendent-school board teams. This is the first known study of its kind exploring the contribution cognitive style has on superintendent-school board relations. Even though a small number of examples were identified, these findings can be the foundation for future research leading to more sophisticated tools of identification and the possible use of A-I theory and the KAI in helping mitigate school governance conflicts where cognitive gap may be a contributor.

Significance of Study

Many believe student achievement is one of the paramount goals in the education of children. As the highest level of leadership in a public school district, the superintendent-school board team plays a critical role in this endeavor (Alsbury, 2003, Alsbury & Gore, 2015; Petersen & Fusarelli, 2001; Saatcioglu, Moore, Sargut, & Bajaj, 2011). Although distant from the teaching and learning that takes place in the classroom, recent research shows a significant relationship between a high functioning superintendent-school board team and the academic achievement of their students (Alsbury, 2003, 2008a, 2008b; Alsbury & Gore, 2015; Delagardelle, 2008; IASB, 2000; Lorentzen, 2013; Waters & Marzano, 2006). From creating a positive culture through its governance, including setting policy and establishing high expectations to aligning resources, a highly functioning superintendent-school board team can and does make a difference (Delagardelle, 2008; IASB, 2000). However, to be effective, a superintendent-school board team must collaborate with each other. Conflict can be a detriment to this collaboration (Mountford, 2008; Van Deuren et al., 2016). Although there can be many reasons for tension and conflict on a superintendent-school board team, one possibility may be related to cognitive style (Kirton, 2003; Van Deuren et al., 2016). If extreme cognitive gap exists between the superintendent and/or one or more board members, it may be a source of conflict (Kirton, 2003). This study explored the role cognitive style, and more specifically, cognitive gap's contribution to intra-group conflict on a superintendent-school board team. Some conflict on superintendent-school board teams that may be related to cognitive gap was found in this study. This finding is in alignment with A-I Theory, and supports the belief that knowledge of A-I Theory and individual

team member KAI scores are valuable to understand and use. This understanding of self and other team members' cognitive style may help to better manage and possibly resolve intra-group conflict if it exists (Kirton, 2003). In the most positive way functional diversity can have an impact on performance, team members may better value and possibly leverage this diversity of thought to more effectively and efficiently solve complex problems (Kirton, 2003).

The results of this study were also designed to contribute to the Kirton Adaption-Innovation Theory and build its database of KAI scores in the field of K-12 education. In the published research, A-I Theory and the KAI have been applied to K-12 settings in only a handful of studies. Other than this study, the KAI has been used only once in research with superintendents and has not been a part of any research focusing on superintendent-school board teams (Finch, 2013; Kirton, 2013). This effort adds to the theoretical base by expanding into K-12 education and evaluating its efficacy in this relatively untouched context.

Definitions

Cognitive gap. The difference of KAI scores between two people, or between a person and the mode of a group.

Cognitive style. The preferred style with which the individual undertakes problem-solving.

Collaboration. Working together, especially in some literary or scientific undertaking.

Conflict. A process that begins when an individual or group perceives differences and opposition between itself and another individual or group about interests and resources, beliefs, values or practices that matter to them.

Diversity. The quality or state of having many different forms, types, ideas, etc.

Extreme cognitive gap. A 20-point difference or more of KAI scores between two people, or between a person and the mode of a group.

Functional diversity. Differences in how people represent problems and how they go about solving them.

Identity diversity. Differences defined by demographic characteristics, such as ethnicity and/or gender.

Moderate cognitive gap. A 10-point difference or more of KAI scores between two people, or between a person and the mode of a group.

Process conflict. Disagreements among group members about the logistics of task accomplishment, such as delegation of tasks and responsibilities.

Relationship conflict. Disagreements among group members about interpersonal issues, such as personality issues or differences in norms and values.

Task conflict: Disagreements among group members about the content and outcomes of the task performed.

Chapter 2

Literature Review

During the preparation for this study, both the theoretical and research literature were examined for each of the five foundational topics. The five topics included the superintendent-school board team and its impact on student learning, intra-group conflict, diversity on teams, cognitive style, and the Kirton Adaption-Innovation Theory and Inventory. These transcend multiple discipline areas and fields from psychology and sociology to education, business, and the military. As all the topics reviewed are extremely broad, a focus was established for each area. First, as student learning is of primary importance in schools, research connecting the role of the superintendent-school board team to student achievement was explored. In addition to this, the characteristics and best practices of highly functioning superintendent-school board teams were also examined. Other related and important topics such as school district governance models and the history of the school board in American education were reviewed, but are not included here as they are not deemed critical to this study.

The literature on conflict is immense. The review on conflict was focused on intra-group conflict, specifically the typology of conflict within groups and the impact each has on team performance. The diversity literature is also vast. Once the difference between identity and functional diversity was established, the review focused on functional diversity as being most germane to this study. Further narrowing took place to look specifically at cognitive style diversity, as functional diversity is also a broad construct incorporating sub-topics ranging from work experience and technical knowledge to values and beliefs.

Cognitive style is well represented in the psychology literature with its foundational roots dating back to the late 19th century to the early days of cognitive psychology and personality theory. Due to the large amount of published material on this topic, review efforts were quickly narrowed to cognitive style as it relates to information processing and problem solving.

A significant amount of time was spent in the review of literature focusing on the Kirton Adaption-Innovation Theory and Inventory as it is the base theory and instrument for this study. This covered the early validity and reliability research of the instrument and its later application in multiple disciplines and fields spanning four decades. A special emphasis was placed on the articles and research that are critical of the theory and inventory to be able to objectively present both their strengths and weaknesses. Knowledge of the theory and inventory was supplemented through completing the in-residence, week-long certification course required to administer the Kirton Adaption-Innovation Inventory. Along with this, personal phone conversations with Dr. Michael Kirton, who proposed the theory in 1976 have taken place over the past two years. The KAI has been used in over 300 research efforts since its introduction (Kirton, 2013). These have taken place in multiple disciplines and fields, with much of the literature residing in cognitive psychology and business related literature, specifically in the leadership/management area.

The Superintendent-School Board Team

The superintendent-school board team plays a critical and powerful role in public school education in the United States (Alsbury, 2003,2008a, 2008b; Alsbury & Gore, 2015; Delagardelle, 2008; IASB, 2000; Lorentzen, 2013; Waters & Marzano, 2006). The

importance of this team functioning at the highest level cannot be overstated. Even though the governance team may be many layers removed from the direct teaching and learning that takes place in the classroom, their decisions and at times, lack of decisions, can have immense impact on all aspects of the district from financial outcomes to student achievement (Alsbury, 2003, Alsbury & Gore, 2015; Petersen & Fusarelli, 2001; Saatcioglu et al., 2011).

Although the superintendent-school board team's impact on student achievement seems logical and obvious, there has not been a great deal of empirical research in support of this position up until the last 15-20 years. A possible issue contributing to this dearth of studies may be the distal relationship between the superintendent-school board team and the classroom. There are many variables between the two, that controlling for them in an experimental or quasi-experimental design is almost impossible. However, not reaching the gold standard of research does not nullify the quality of research that has recently taken place.

…Studies are now finding that distal conditions can also have a significant effect on student learning when they directly affect proximal conditions, that is, when they influence the conditions of practice within the district or effect the learning environment within the schools and classrooms. (Alsbury & Gore, 2015, p. 17)

The Lighthouse Study is considered one of the seminal efforts that is foundational to the recent quality and quantity of research linking superintendent-school board teams with student-achievement. This study was commissioned by the Iowa Association of School Boards (IASB, 2000). The initial study, which took place from 1998-2000, was followed by a second phase from 2002-2007 (Delagardelle, 2008). Overall findings

indicated, "The lighthouse Inquiry has demonstrated that school boards in high achieving districts are different in their actions and beliefs from school boards in low-achieving districts" (Delagardelle, 2008, p. 194).

More recent studies, although not casual, continue to add to the literature supporting the strong relationship between the superintendent-school board team and student learning. These include direct correlational studies by Alsbury (2003) and Delagardelle (2008), along with a comprehensive meta-analysis by Land (2002). Other works include Hess and Meeks (2010) and recent doctoral dissertations (Blasko, 2016; Holmen, 2016; Lorentzen, 2013).

The research cited above does not specify the type of governance model various boards adhered to. This certainly may be a factor and could be an area of future research. However, regardless of governance model that is followed, one common denominator does stand out. That is, the quality of the working relationship within the superintendent-school board team is critical.

> When the board/superintendent relationship works well, all parties understand the issues and the roles that each play in decision making, goal setting, progress monitoring, long range planning and implementation, policy making, and creative problem solving. When roles and issues are clear, students and staff benefit. (Van Deuren et al., 2016, p. 3)

Unfortunately, when the superintendent-school board team does not work well together, the impact can be extremely negative both for the district and the community. "Extant literature in this area has consistently asserted that a poor relationship between the superintendent and the board of education poses a threat to the district's ability to

meet its goals and to engage in systemic reform" (Petersen & Fusarelli, 2008, p. 116).

Negative relationships on the superintendent-school board team may result in energy and

other resources being focused on issues not related to the mission and goals of the

district. "District resources may be spent addressing issues related to the failed

relationships rather than to issues benefiting student learning" (Van Deuren et al., 2016,

p. 3).

Given the impact the superintendent team can have on all aspects of a school

district, including student learning, and the importance of a positive working relationship

within the team to meet its mission and goals, the hope would be a state of high

collaboration would be the norm. Unfortunately, this has not been the case historically.

Spanning two centuries, there are countless cases of superintendent-school board teams

having power struggles and conflict. Unfortunately, this dysfunctionality still exists today

(Mountford, 2008).

But the collective strength of a superintendent-school board team is the unique

perspective each member brings to the table. This diversity is also its weakness.

"Superintendents readily recognize that boards are five to seven or more distinct

individuals-each behaving on the basis of personal beliefs, interest or causes" (Kowalski,

1995, p. 44), yet forced to act collaboratively while making decisions" (Mountford, 2008,

p. 89).

Diversity on teams. Diversity is "a characteristic of social grouping that reflects

the degree to which objective or subjective differences exist between group members"

(van Knippenberg & Schippers, 2007, p. 516). Polzer et al. (2002) stated: "Proponents of

diversity hold that differences among group members give rise to varied ideas,

perspectives, knowledge and skills that can improve their ability to solve problems and accomplish their work" (p. 296). The aforementioned has some support by research, but for only certain types of diversity and when other critical conditions are met. To be accurate, current research supports both sides of the argument that diversity can help or hinder a team (Jehn et al., 2008; Jehn, & Mannix, 2001; van Knippenberg & Schippers, 2007).

> Indeed, diversity is often portrayed as a "double edged sword" in contemporary organizational theory. At one end of the spectrum, proponents of team diversity stress positive effects of member heterogeneity on team outcomes whereas others counter that many irreconcilable divisions among heterogeneous members lead to dysfunctional team interaction and suboptimal performance. In the realm of managerial research, these competing assessments of team diversity have also manifested with mixed empirical findings, hence perpetuating a lack of consensus on how members' compositional variables influence team processes and outcomes. (Horowitz & Horowitz, 2007, p. 988)

A contributing factor to the inconsistency in the research is the "lumping" of the term diversity into one definition (Milliken & Martins, 1996; Williams & O'Reilly, 1998). Often, diversity is defined by demographic characteristics, such as ethnicity and/or gender. This definition of "identity diversity" (Hong & Page, 2004), "bio-demographic diversity" (Horowitz & Horowitz, 2007), or "social diversity" (Jehn et al., 2008) is often referred to as "surface level' and is based upon observable characteristics that can be seen and categorized such as age, gender, and race/ethnicity. This type of diversity is in contrast to "deep level diversity" (Horowitz & Horowitz, 2007), "task-related diversity"

(Milliken & Martens, 1996), "informational diversity" (Jehn et al., 2008), or "functional diversity" (Hong & Page, 2004), representing team members' attitudes, beliefs, values, along with functional expertise, education, and organizational tenure.

Focusing strictly on identity or bio-demographic diversity can be misleading and limiting, to both the team and the individual. This statement is in no way designed to downplay the importance of this type of diversity on teams for other important reasons, including representation and voice. However, there is very little research that supports the position functional or bio-demographic diversity significantly adds to problem solving capacity and overall team performance. In their meta-analyses of the effects of team diversity on team outcomes, Horowitz and Horowitz (2007) stated, "there is no discernible effect of bio-demographic diversity on team performance, which concurs with previous meta-analyses" (p. 1006). They went on to state,

> The lack of relationship between bio-demographic diversity and team
> performance suggests that forming teams soley based on demographic attributes
> would not necessarily maximize the benefits of diversity on teams; simply
> increasing the amount of diversity on teams is not an effective strategy. (pp.1006-
> 1007)

In their review of the literature dealing with work group diversity from 1997-2005, van Knippenberg and Shippers (2007) essentially concluded the same thing. They specifically cited the seminal review by Williams and O'Reilly (1998) where the authors examined more than 80 studies, covering 40 years of diversity research. Again as stated earlier, it is important to emphasize there are many good reasons to seek diversity on teams. However, the overall research does not support the notion that bio-diversity

enhances team performance. In some cases, it may have negative consequences (Jehn et al., 2008).

Consequently, a great deal of research has emerged to expand the concept of diverse team representation by proposing that each individual brings a diversity of thought to the team. This diversity of thought or cognitive diversity as defined as "the degree to which team members differ in terms of expertise, experiences, and perspectives" (Miller et al. 1998). This is a concept far more complex than dichotomous classifications. Some believe cognitive diversity and the value of its power to help solve complex problems should include "functional diversity" (Hong & Page, 2004) or "task-related diversity" (Horowitz & Horowitz, 2007). In contrast to identity diversity, *functional diversity* has been defined as, the "differences in how people represent problems and how they go about solving them" (Hong & Page, 2004, p. 16385).

As with most complex constructs, the terms diversity of thought and cognitive diversity are extremely broad, leading to many definitions in the literature. In the context of this paper, cognitive diversity and diversity of thought will be equated to functional diversity and will be operationally defined to "the style of problem solving" as outlined by the Adaption-Innovation Theory (A-I Theory) and measured by the Kirton Adaption Innovation Inventory (KAI) (Kirton, 1976, 2000, 2003).

There are studies in the literature in support of the theory that groups made up of people with diversity of thought (problem solving style) have greater potential to solve an array of complex problems (Hong & Page, 2004; Polzer et al., 2002). However, this diversity is harder to lead and manage because team members often do not appreciate and understand the value that other people who "think differently" can bring to the problem-

solving process (Kirton, 1976). In many cases, these different thinkers could be perceived as ignorant, stupid, troublemakers, resistant to change, etc. This can lead not only to internal turmoil, but may also result in "diverse thinkers" leaving the group (Kirton, 1976, 2000, 2003).

Even though addressing this problem is hard, "Managing wide arrays of cognitive styles is becoming a necessity for leaders within rapidly changing and diversifying organizational climate" (Stum, 2009, p. 75). Jacobson (1993) noted, "An understanding of cognitive style could facilitate more effective working relationships by explaining what otherwise might be perceived as random variations in human behavior" (p. 1131). The Adaption-Innovation Theory (A-I theory) and the Kirton Adaption-Innovation Inventory (KAI) address the issue of complex problem solving with groups.

Diversity of thought on a superintendent-school board team, although valued and sought after for its contribution to solving complex problems, can be challenging to identify and manage. The effort and focus to manage conflict and miscommunication that diversity of thought can create, takes away from the effort to solve the problem the team is tasked to do. If diversity of thought is managed well, conflict and miscommunication can be reduced, thus allowing greater focus on the problem. When this occurs, the capacity to solve complex problems should be improved, thus resulting in both the quantity and quality of possible solutions (Kirton, 1976, 2000, 2003).

Cognitive style. As with the term cognitive diversity, a plethora of definitions exist in the literature concerning cognitive style. This again is related to the broad nature of the construct and the many dimensions that are highlighted in the research. However, even though a number exist, most appear to have many of the same components. For

example, Armstrong, Cools, and Sadler-Smith (2011) stated, "Cognitive styles refer to

consistent individual differences in how individuals perceive, think, solve problems,

learn, take decisions and relate to others" (p. 1). In another example taken from Allison

and Hayes'(1996) Cognitive Style Index, the definition is expanded upon.

> Cognitive style is an individual's way of gathering, processing, and evaluating
>
> data. It influences how we scan our environments for information, how we
>
> organize and interpret it, and how we integrate our interpretations into mental
>
> models and subjective theories that guide our behavior. (Allison & Hayes, 1996,
>
> p. 2)

For the purposes of this study, cognitive style will be operationally defined in

accordance with the Kirton Adaption-Innovation Theory. That is, "mental processes

underlying problem solving, decision making and creativity" (Kirton, 2000, p. xxix).

The genesis of cognitive style research dates back to late nineteenth century and

early to mid-twentieth century through work of James, Galton, Jung, and Allport

(Armstrong et al., 2011). However, the first major study did not take place until the 1940s

when Witkin and his associates introduced the "theory of field dependence-field

independence (FDI) based on a continuum of modes of perception" (Armstrong et al.

2011). This theory uses a bipolar model where an individual is located on a continuum

with a field dependent or a field independent cognitive style on each end. Witkin, Moore.

Goodenough, & Cox (1977a) stated, "A person with a field-dependent style is likely to

rely on external referents as guides in information processing, the field-independent

person tends to give greater credit to internal referents" (p. 197). Witkin et al. (1977a)

associated various characteristics with the typology. For example, the field-dependent

individual is typically more social, interested in other people, and tend to favor interpersonal domains such as elementary education and other vocations where there is a high level of social interaction. In contrast, field-independent people are more interested in abstract principles and ideas. They favor impersonal domains and are likely to have a non-social orientation. They are attentive to social cues requiring cognitive restructuring skills and work well alone. They are typically more drawn to the sciences and other related vocations (Witkin et al., 1977a).

Two key tenets of field dependent-independent theory and others associated with it are that people are stable over time and style is different than abilities and capacity, thus making them value neutral (Allison & Hayes, 1996; Mello & Delise, 2015; Witkin et. al 1977a; Witkin et al., 1977b). Witkin et al. (1977b) stated:

> To the extent that people on each end of the dimension are high in some
> characteristics and low in others, it is not better or worse to be located at one pole
> or the other. At each pole there are to be found characteristics that can be adaptive
> in specified circumstances. (p. 198)

Since Witkin et al.'s (1977a) initial research, a great deal of additional research has taken place focusing on cognitive style. Other theories and terms have emerged in an attempt to explain differences in cognitive functioning to include Klein's leveling-sharpening (1954), Kagan's impulsivity-reflectivity (1966), Guilford's converging-diverging (1967), and Pask's holist-serialist (1972) (Armstrong et al., 2011).

In a review of 40 years of research on cognitive styles and business related areas such as innovation, creativity, institutional fit, etc., Armstrong et al. (2011) reviewed papers published in the field between 1969-2009. Starting with 4569 papers in 938

journals, they ended up with 328 papers meeting their criteria. Included in this review was a summary of the eight most prominent instruments used to measure cognitive style. They included, Group Embedded Figures Test (1971), Myers-Briggs Type Indicator (2003), Kirton Adaption-Innovation Inventory (1976), Cognitive Style Index (1996), Rational-Experimental Inventory (1996), Linear/Non-Linear Thinking Styles Profile (2007), Cognitive Style Indicator (2007), and the Thinking Style Inventory (1991). In their review, they found the Myers-Briggs Type Indicator (24%), Kirton Adaption-Innovation Inventory (21%), and the Cognitive Styles Inventory (14%) to be the primary instruments used in the research up to 2009.

The Kirton Adaption-Innovation Theory (A-I Theory) and Kirton Adaption-Innovation Inventory (KAI) are one of the cognitive style theories and instruments that were developed after Witkin et al.'s (1977a) initial work and has been used in business, education, the military, and in a number of other fields. It was designed in part, to help predict and possibly mitigate conflict on teams where the diversity of cognitive style may be a contributor (Kirton, 1976, 2000, 2003).

Intra-group conflict. Conflict is a complex construct that transcends discipline lines and levels of scholarly research (De Dreu & Gelfand, 2008). It is widely understood to be "a process that begins when an individual or group perceives differences and opposition between oneself and another individual or group about interests and resources, beliefs, values or practices that matter to them." (De Dreu & Gelfand, 2008, p. 416).

In the diversity literature, a typology exists placing diversity into one of two primary groups, that is identity and functional diversity. Intra-group conflict also has a well-established typology. The two major types of conflict that appear in most of the

literature are relationship conflict and task conflict (Amason, 1996; Jehn et al., 2008).

More recent research has included process conflict in this typology (Jehn et al., 2008).

"Relationship conflicts are disagreements and incompatibilities among group members about issues that are not task related but that focus on personal issues" (Jehn et al., 2008, p. 180). The research on relationship conflict negatively impacting team performance is overwhelming. It has been shown relationship conflict correlates with "increased turnover, high rates of absenteeism, decreased satisfaction, low levels of perceived performance, poor objective performance, lack of creativity, and low commitment" (Jehn et al., 2008, p. 180).

Process conflicts are "about logistical and delegation issues such as how task accomplishment should proceed in the work unit, who is responsible for what and how things should be delegated" (Jehn et al., 2008, p. 181). As process conflict is the newest form of conflict added to the typology, it has not been as well researched. However, the available research indicates it acts more like relationship conflict and is usually detrimental to desired team outcomes (Jehn et al., 2008).

Task conflicts "are disagreements among group members' ideas and opinions about the the task being performed" (Jehn et al., 2008, p. 180). Task conflict and cognitive diversity are related. This is an area that has been well-researched where cognitive diversity can have both a negative and positive impact on team performance and internal cohesion. Like relationship and process conflict where diversity of any kind, be it identity or functional, can have a negative impact on a team's performance, task conflict can impact the same way. However, in the case of cognitive diversity where trust is well-established and strong protocols are in place, task conflict can have a positive

impact on team performance and internal cohesion resulting in greater problem-solving capacity (Jehn et al., 2008).

Kirton Adaption-Innovation Theory

In an attempt to leverage the positive impact of cognitive diversity on teams and mitigate conflict related to it, Dr. Michael Kirton developed the Kirton Adaption-Innovation Theory (A-I Theory) and Instrument (KAI). Kirton's (2003) Adaption-Innovation Theory (A-I Theory) describes two primary aspects of leading team decision-making that need to brought into appropriate balance (Kirton 1976, 2000, 2003).

Superintendent-School board teams are required to solve complex problems; however, leaders are challenged with managing the dynamics within the team. If too much time and energy are focused on team management, resources are taken away from solving problems. A primary challenge of teams according to Kirton is the cognitive diversity on the team. Conflicts develop when a team's style is not well understood and its cognitive diversity is not appreciated. Kirton's Adaption-Innovation Inventory measures a number of team characteristics including cognitive diversity, which is the focus of this paper (Kirton, 1976, 2000, 2003). Kirton believed that higher levels of cognitive diversity can lead to conflict on the team. However, some of this conflict could be mitigated with the use of A-I Theory and the KAI. "Adaption-Innovation Theory (A-I theory) is a model of problem solving and creativity, which aims to increase collaboration and reduce conflict in groups" (Kirton, 2003, p. i). The genesis for the A-I Theory came out of the Management Initiative (Kirton, 1976, 2000, 2003). This study utilized qualitative methods to look at corporate initiative (change) processes to better understand group dynamics. The research focused on the change processes of medium-small (less

than 1000 employees) companies or divisions of larger companies that approximated the same size (as companies studied) and utilized the review of process artifacts (relevant papers) and numerous interviews. The result was an "idealized template" how change happened in these companies or departments. As identified by Kirton (2003), the steps of the observed processes were, (a) perception of the problem, (b) analysis of the problem, (c) analysis of the solution, (d) agreement for change, (e) acceptance for change, and (f) implementation.

At every stage, Kirton discovered challenges to the change process, but also observed change itself may not be the core issue. As he stated, "there are no people who like all changes, and there are no people who like no change" (Kirton, 2003, p. 14). His conclusion included the belief that challenges revolved mostly around conflicts in problem solving style. From this original study, the development of A-I Theory and the KAI took place, with the goal of better understanding problem solving processes and enhancing the implementation of change.

The essence of A-I theory is that all people are creative and all people solve problems (Kirton, 1976). It relates to thinking style, commonly referred to as cognitive style in the literature described as "mental processes underlying problem solving, decision making and creativity" (Kirton, 2000, p. xxvii). Put another way, the A-I Theory defined the "degree of structure a person is comfortable with when problem solving or thinking in general" (Kirton, 2000, p. xxix). The theory attempts to explain cognitive style within a team, not problem solving capacity or process (Kirton, 1978). "Cognitive style has been defined as consistent individual differences in preferred ways of organizing and processing information and experience" (Jacobson, 1993, p. 1131).

Loosely related to a personality trait, style does not change over time or with training (Isaksen, Babij, & Lauer, 2003; Kirton, 1976, 2000, 2003). In the literature, Kirton does not identify to what extent nature (genetics) or nurture (learning and the environment) play in the development of problem solving style, only that it is set "early on" (Kirton, 2003).

Kirton defined and used the terms *adaptor* and *innovator* within his bi-polar theory. Adaptors tend to solve problems within the existing structure. They prefer to improve upon the system and *do things better*. Innovators are quick to challenge or do away with current structure and prefer to *do things differently*. Kirton claimed both types are needed in solving complex problems. In general, one is not more important than the other, just different. Both style preferences can be more advantageous than the other at different times, depending upon context. For example, adaptors, when collaborating with innovators, can provide stability, order and continuity to the partnership. As they are typically sensitive to people, they are strong at maintaining group cohesion and co-operation. Along with this, adapters provide a safe base for the innovator's riskier operations (Kirton, 2003).

Innovators, when collaborating with adaptors can supply the task orientation, the break with the past and accepted theory. They can appear insensitive to people, often threatening group cohesion and co-operation. At the same time, they are often the catalyst to bring about the periodic radical change, without which institutions tend to ossify (Kirton, 2000).

In accordance with A-I Theory, it is important to not look at adaptors or innovators as a typology where one is placed in a box. As all people solve problems and

have a preferred style, all can be plotted on a continuum, someplace between pure adaptor and pure innovator. There can be strong tendencies of behavior as outlined in Appendix A.

In proper use of KAI scores, it is critical to understand the importance of relative positioning. A high adaptor could be the most innovative in a group. This also holds true for a person who would place high on the innovator scale, but being the most adaptive in a group. If the cognitive gap between an innovator (who is more adaptive) and another innovator is extreme enough, conflict and miscommunication can occur (Kirton, 2003).

Kirton emphasized the value of having teams made up of people representing a wide range on this continuum. However, the more diverse teams are in cognitive style (in this case, problem solving style), the greater probability communication challenges and conflict will occur. Anytime one is forced out of his/her problem-solving style, coping behavior is needed. Kirton argued that one chooses to cope due to motive, but it is costly. As A-I theory is based on the idea that, "one's preferred style of problem solving seems to be deep seated; research confirms that it is determined in early life (if not inherited) and is highly resistant to change" (Kirton, 2003, p. 254), coping is unnatural and hard work. After extended periods of time, coping can result in a psychological toll, including the possibility of team members leaving the organization.

To put the theory into practice and to have a useful tool to help better appreciate and understand one's own style and the style of others, Kirton developed the KAI. The inventory develops a quantitative score that can be used to identify cognitive gap(s) between team members and between teams. As A-I Theory posits, a relationship exists

between cognitive gap and conflict and miscommunication which impacts problem-

solving capacity (Kirton, 2003).

      The Kirton Adaption-Innovation Inventory. An excerpt from the Mental

Measurements Yearbook stated, "The Kirton Adaption Inventory (KAI) is reported to

measure an adult's preferred style with respect to bring about change" (Brown, 2001).

First published in 1976, the KAI is a paper and pencil, 32-item, untimed measure, which

can be administered individually or in groups. The average time to complete the

inventory is 5-10 minutes. It was initially designed for "British and U.S. adults and

teenagers over age 14" (Brown, 2001).

      The inventory consists of 32 descriptors asking, "how easy or difficult it is to be a

person who…" The responses are marked on a 17-point scale, which for scoring purposes

is reduced to a five-point scale. The inventory is administered and scored only by a

certificated trainer/scorer. The inventory was originally normalized utilizing samples

from a number of countries including the United Kingdom, Italy, United States, France,

Belgium, Canada, Netherlands, Slovakia, and the Czech Republic. A theoretical score

ranges from 32 to 160, with a theoretical mean of 96 and a general population mean of

means around 95 ($N = 2744$, $M = 94.76$, $SD =$ circa 17.0) (Kirton, 1976, 2000, 2003).

      Much research has supported the inventory through the years as both valid and

reliable. This original research primarily took place in the 1980s and 1990s, with many of

these as replication studies from Kirton's original work. A partial list includes studies by

Kirton and McCarthy (1985), Goldsmith and Matherly (1986a), Goldsmith and Matherly

(1986b), Clapp (1993), Riley (1993), and Rickards and Gaston (1995). Other early

correlational research focused on the link between KAI and personality traits (Goldsmith,

1984; Jacobson, 1993), creativity (Isaksen & Kaufmann, 1990), occupations (Kirton & Pender, 1982), work performance (Clapp & De Ciantis, 1989; Tullet, 1995), and problem solving rates (Hammerschmidt, 1996).

Internal reliability of the KAI in the general population has ranged from .84 to .88 in various studies utilizing Cronbach alpha and .86 utilizing K-R20 (Kirton, 2003, Appendix 6). Internal reliability has also been reported for various groups and occupations including managers, nurses, teachers, and university students (partial list), ranging from Cronbach alpha = .79 to Cronbach alpha = .91 (Kirton, 2003, Appendix 6). Test-retest reliability ranges from .82 (43 months) to .86 (5 months) (Kirton, 2011, Appendix 6). Factor structure and construct validity has been extensively examined using confirmatory factor analysis (Bagoozzi & Foxall, 1995; Foxall & Hackett, 1992). Since its development, the KAI has been extensively researched calling upon samples from a number of countries including Great Britain, New Zealand, Australia, and the United States (Bagozzi & Foxall, 1995; Kirton, 1976). These samples have included adult sub-groups and high school students (Beene & Zelhart, 1988). Three factors have been identified. They are originality, efficiency, and rule group conformity. The criterion for each question to be assigned as an item to a factor was .30 or greater (Kirton, 1976, 2000, 2003). As Kirton stated in his original paper:

The first factor (Factor 2) is called Originality, as it contains items that describe the creative person in much of the literature, especially Rogers (1959) creative loner. The second (Factor 4) is Methodical Weberianism, as it describes at one extreme the kind of person Weber (1948) envisaged as needed in organizations-precise, reliable, disciplined. The third (Factor 6) is called Mertonian Conformist,

since it mirrors Merton's (1957) description of the person who fits well into a

bureaucracy because he has proper respect for authority and rules. (Kirton, 1976,

p. 625)

The original factor analysis has been supported in follow-on studies. In a

replication study of Kirton's work, Beene and Zelhart (1988) used a sample of 249

college students and 40 university administrators. They found the "weighting and order

somewhat different, but the over-all placement of items in each of the three subscales is

remarkably similar" (Benne & Zelhart, 1988).

A major tenet of A-I theory is style is not impacted by capacity or process

(Kirton, 1976, 2000, 2003). Given this, test-retest reliability should not be impacted by

creativity training. This component of A-I Theory was supported by Murdock, Isaksen,

and Lauer (1993). In their study, subjects were 143 undergraduates enrolled in one of

eight sections of an introductory course on creativity along with 38 students enrolled in a

marketing class on the same campus. The creativity course was designed to not only

improve knowledge of creativity, but also to improve creative problem solving skills. The

course had been shown to improve problem-solving skills (Murdock et al., 1993, p.

1125). KAI total scores and each of the three subscale scores were analyzed via a 2x2x2

Lindquist Type III analysis of variance. The researchers found there was no evidence of

training effect impacting the KAI scores.

Limitations and concerns of A-I Theory and the KAI. The Kirton Adaption-

Inventory has been used in a plethora of research efforts and is cited extensively in peer-

reviewed articles. Over 300 studies sanctioned to use the KAI are listed in the 2013

Kirton Adaption-Innovation Training Manual used by trainers/administrators (Kirton, 2013).

As with any theory and instrument designed to measure it, there are limitations and concerns. Various challenges to A-I Theory and KAI have focused on the stability of style over time and through different results in Factor Analysis. A-I Theory posits that as a problem-solving style, much like a personality trait, significant changes do not occur over time and one's style should not impacted by training. Also, in theory, culture should not impact style.

In a study looking at the relations between the KAI and the Myers-Briggs Type Indicator, "a significant positive relationship was also found between Kirton scores and age ($r = .43$, $p = .001$)" (Jacobson, 1993, p. 1134). Her study of 54 "top managers and executives" of service-sector occupations in the eastern and Midwestern United States, included 44 men and 10 women. Although a relatively small sample, this finding is in contrast to the A-I theory that gender, age, and socioeconomic status have only a "very slight" relationship to scores on the KAI (Jacobson, 1993).

Mulligan and Martin (1980), in a study involving 303 high school students from New Zealand, claimed "Kirton's method of scoring for a general factor of adaptiveness-innovativeness lacks face validity" (p. 883). Kirton, in a follow-up article refuted the challenges point by point (Kirton, 1980).

Possibly the most significant challenges to A-I Theory and the KAI is in the area of culture, especially Asian. In a 2007 study from Singapore (Ee, Seng, & Kwang, 2007), culture is discussed as having some influence. Findings from a study comparing the factor structures using the English, Japanese, and Chinese versions of the KAI are

potentially more significant. Early studies of KAI supported the theory of minimal

cultural influence. Up until 1998, most of the research utilizing the KAI was from

western cultures (USA, UK, Australia, etc.). Citing findings from factor analyses for each

of the three cross-national subsamples, researchers stated, "Differences in factor

structures suggest that adaptation and innovation may be interpreted differently across

cultures" (Danis & Dollinger, 1998, p. 1095).

Their original study drew from a sample of graduate ($n = 282$) and undergraduate

($n = 116$) business administration students in the U.S. ($n = 156$), Japan ($n = 139$), and

Hong Kong China ($n = 103$). The KAI was given to all participants. "For all Chinese- and

Japanese –speaking subjects, the scale was translated into either Chinese and Japanese,

then back-translated into English to ensure functional equivalence of the scale items"

(Danis & Dollinger, 1998, p. 1096). Findings from this study showed that U.S.

respondents favored the innovator style, Chinese respondents favored the adaptor style,

and Japanese respondents did not show a preference for either. In following up with this

original study, the researchers performed a factor analysis. They hypothesized the factor

structures among the groups would be different.

In the analysis, an oblique (oblimin) rotation was used, as "there was no

theoretical or conceptual rationale for positing the factor scores could not be correlated"

(Danis & Dollinger, 1998, p. 1097). Minimum factor loading criterion was used for the

analysis of U.S. responses ($n = 156$, .45), Chinese ($n = 103$, .55), and Japanese ($n = 139$,

.47).

Results supported reliability as experienced by prior studies. The overall sample

produced a coefficient alpha of .83. The subgroup coefficient alphas were, U.S. (.90),

Chinese (.83), and Japanese (.72). For the U.S. sample, the results clearly showed a three-factor structure. From this, the researchers concluded, "that we successfully replicated the results that many others have had employing the Kirton Adaption-Innovation Inventory with Western subjects" (Danis & Dollinger, 1998, p. 1097). The Japanese analysis produced a three-factor structure, but differed significantly for the U.S. findings. The results of the U.S. analysis showed a three-factor structure, accounting for 39.9% of the total variance. Factor 1, Rule-Governance (R) accounted for 23.2% of the variance, Factor 2, Sufficiency of Originality (SO) accounted for 9.8%, and Factor 3, Efficiency (E) accounted for 6.3%. In the Japanese sample, a three-factor structure accounted for 33% of the total variance, but Factor 1 was Sufficiency of Originality, accounting for 16.5% of variance, Factor 2 was Efficiency and accounted for 10.2%, but only contained four significant loadings, all from Efficiency. Factor 3 was Rule Governance, also contained four significant loadings, but one was from Sufficiency of Originality and one from Efficiency. Sixteen of the items did not load significantly on any of the three factors.

The Chinese results were even more problematic as only 13 items loaded significantly. Results for the three-factor method did account for 35% of the overall variance, but only one factor emerged clearly as Factor 2. That was Sufficiency of Originality, which accounted for 10.7% of the variance. Factor 1, accounting for 17.8% of the variance, contained one item from each of the three of Kirton's original factors. Factor 3, accounting for 6.4% of the variance, also contained two items from Rule-Governance along with one each from the other two. From this analysis, the researchers concluded, "that the factor structure that emerged from these subjects deviated

substantially from the normative data of past studies and the U.S. data of this study"
(Danis & Dollinger, 1998, p. 1100).

The researchers acknowledged the limitations of their study, including the possibility of "subtle changes in meaning" may have taken place through the translation process and also the relatively small sample size required robust significance loading, which excluded a number of non-significant loadings, especially from the Chinese sample. Even with these limitations, the study does bring to question the possibility factor structure may be based partly on culture, thus challenging earlier findings.

Although these findings question the efficacy of the KAI in non-western cultures, the evidence on this is still inconclusive. More cross-cultural research on the KAI is needed. Related to this, much of the early research was focused on the validity and reliability of the instrument. As the norming data is relatively old, in some cases taking place almost 40 years ago, new norming data is needed.

Possibly the most significant hole in the support of A-I theory and the KAI, is the overall lack of research utilizing the KAI as a predictor in correlation studies and as a variable in quasi-experimental or experimental designs. The latter was non-existent in this literature review. Many studies only report KAI results as descriptive statistics. Some of these will infer correlation, but not support it with the data analysis in the write-up. Where there is some statistical evidence for correlation, very few use sophisticated or robust processes beyond the development and reporting of the Pearson's Correlation Coefficient. Kubes (as cited in Kirton, 2000) stated:

> So far neither Kirton nor any other has paid much attention to the clarification of
> the nature of the information processing behind the A-I concept. No

comprehensive study has been carried out to link it with the large body of existing literature in cognitive psychology in general or with other concepts of cognitive style in particular. These studies would require more complex research (experimental design) with multivariate statistics, whereas the works published during the last 18 years are based predominantly on correlational analysis of KAI and other paper-and pencil measures. (p. xxix)

In the literature review for this paper, the trend Kubes articulated in 2000 continued. Namely, the majority of research discovered dealt with supporting the validity and reliability of the KAI instrument. Other research explored correlations between the KAI and other personality scales, such as the Myers-Briggs. Still other studies looked at KAI scores in relation to occupation and organizational fit. No research was found utilizing knowledge of A-I theory and KAI scores as a variable in an experiment or quasi-experiment.

Another significant area lacking in research is the link between knowledge of A-I Theory and KAI scores with the actual reduction of conflict and the improvement in problem solving. The theory and connection are logical, but the review of literature does not indicate any work has been attempted in this area. At best, anecdotal data in support of this comes from A-I trainers. In Texas for example, A-I Theory and KAI scores have been taught and used as part of school board training by the Texas Association of School Boards for over five years with positive results (D. B. Freeman, personal communication, April 24, 2015). Again, anecdotal support exists, but empirical evidence is lacking.

Research using the KAI with superintendents. As stated in the Introduction, Phase One of this study is a partial replication of Finch's dissertation where he is the only

one known to have used the Kirton Adaption-Innovation Inventory with school superintendents. Finch (2013) focused on public school superintendents serving in suburban school districts around the Chicago metropolitan area. In total, 244 superintendents, representing 247 districts were asked to participate in his study. As a component of his mixed-methodology research, participants were asked to complete the Kirton Adaption-Innovation Inventory. Responses were received from 123 superintendents, representing a 50.4% response rate. Of the 123 respondents, 80 were male (65%) and 43 were female (35%), ranging in age from 37 to 75 ($M = 51.69$, $SD = 7.76$). Experience level ranged from one year to 35 years ($M = 6.46$, $SD = 5.44$). Of the respondents, 75 were in their first superintendent position. Others had served in more than one superintendent position, with the maximum number being six.

The scores on the KAI ranged from a low of 70 to a high score of 153. The mean was approximately 101 ($M = 101.33$, $SD = 15.22$), which is slightly more innovative than the general population mean of 95. The mean for males ($M = 100.15$, $SD = 16.35$) was relatively more adaptive than the mean for females ($M = 103.53$). Female superintendents scored on average, four points higher than males (Males, $M = 100$; Females, $M = 104$). In the variables of age, experience, and district types, no significance differences were found. From this Finch concluded the data supported A-I theory in that demographic factors such as age, gender, or experience level do not impact cognitive style.

Distribution of the scores by continuum category skewed right. The range was from 70 to 153. No scores fell into the Very Highly adaptive (32-49) or the Highly adaptive (50-64) categories. Six scores were Moderately adaptive (65-79), while eight were Highly innovative (125-139) and two were in the Very Highly innovative category

(140-160). As to be expected in a normal distribution, the majority of scores were in the center. Forty scores were Mildly adaptive (80-95), 48 were Mildly innovative (96-110), and 19 were Moderately innovative (111-124).

Of note is how the superintendents scored in the three factors of Sufficiency of Originality, Efficiency, and Rule/Group Conformity. "An individual KAI score has an established set of sub-scores that are used to measure variance against each of the three factors" (Finch, 2013, p. 111). Finch found, overall, the responding superintendents skewed toward the innovative side in sufficiency of originality by approximately +6 points (Finch, 2013, p. 112). Breaking down the results, the moderately adaptive group scored +10 to the right (more innovative), while the highly innovative group did not skew at all. Looking at the efficiency factor, the entire sample skewed approximately three points to the adaptive side. This is also true for rule/group conformity as the sample skewed to the left (more adaptive) by four points.

From the KAI scores, Finch concluded superintendents as a whole lean towards creating ideas (innovative), but also desire efficiency and "value, as a group, a greater cohesiveness and desire for consensus within an organization" (Finch, 2013, p. 113). Finch also noted that superintendents in his study appeared to be relatively balanced. This balance allowed them to act as "bridgers," a critical role identified by Kirton as those who can value and communicate with the extremes of the continuum (Kirton, 1976, 2000, 2003).

From their KAI scores, nine superintendents were chosen for follow-on interviews for the qualitative component of the study. Three superintendents were placed in a control group. Their scores ranged from 85-105. Three superintendents were selected

with scores below 85, placing them in the adaptive range. Three superintendents were selected to represent the innovative range, with scores higher than 124. Along with KAI scores, superintendents were specifically chosen to represent "various genders, district types, experience levels, geographic locations, and satisfaction levels of district, state, and national education progress" (Finch, 2013, p. 118).

This study contained detailed information from each interview. It did not specifically address conflict between superintendents and board members, administrative teams, etc., other than comments about conflict showing up in the narratives. However, a section on coping was presented, especially emphasizing the degree of coping behavior required by the high innovator superintendents. The author stated:

Highly innovative superintendents needed to use significant coping behaviors to fit into the system but were imbued with a strong sense of motivation and low self-doubt that allowed them to access the energy for coping with the current system for longer periods of time, but highly innovative rebel superintendents did leave organizations or change positions when the opportunity for injecting change into the system either ended or greater opportunity presented itself. (Finch, 2013, p. 265)

Along with descriptive statistics, correlations were presented on KAI scores and age, gender, district type, years as superintendent and number of positions held. As no significant correlations were discovered, the author concluded that his findings supported the A-I Theory of cognitive style not being influenced by demographic factors.

The degree of coping found by highly innovative superintendents also supports A-I Theory. Again, as there was no mean for each district presented, or for various sub-

groups such as school boards, administrative teams, staffs, etc., specific cognitive gap

could not be identified. However, it can be assumed that any medium to large district will

have a normal population with a mean of 95 and a standard deviation of approximately

17 (Kirton, 2000, 2003). Based upon the criteria set for highly innovative superintendents

in this study, that of a KAI score above 124, this would give these superintendents a *z*

score of at least 1.76, with approximately 96% of the district more adaptive than they.

The probability of them leading districts with the vast majority of staff well beyond a

cognitive gap of 20 points is quite high. More than likely, these superintendents are using

significant coping behavior on a daily basis.

Conclusion

This literature review is designed to create the theoretical and empirical base to

this study, including the connections of each topic to the logic flow that guides the two

research questions. Specifically, it is imperative that superintendent-school board teams

function effectively, due to their impact on student learning, both positive and negative.

As the superintendent-school board team is often faced with difficult problems to solve,

the quality and quantity of solutions to these challenges are often enhanced by the

cognitive diversity on the team, along with their ability to leverage task conflict for idea

generation as part of the problem- solving process. However, this cognitive diversity, if

not understood and appreciated, can result in damaging conflict with a negative impact on

the team's cohesion and effectiveness (Kirton, 2003).

The Kirton Adaption-Innovation Theory and Inventory may help explain and

identify cognitive diversity on superintendent-school board teams. The identification of

conflict that could be related to cognitive style and measured by the KAI may contribute

to this effort. Although this study does not examine the potential effect that knowledge of cognitive style and one's own KAI score may have on mitigating conflict on teams, it does contribute to a foundation for future research in this area.

Chapter 3

Method

Purpose Statement

The purpose of this study was to discover the contribution, if any, cognitive style has on conflict within superintendent-school board teams in eastern Washington State. For this study, in accordance with the Kirton Adaption-Innovation Theory (A-I Theory), cognitive style is defined as the preferred style with which the individual undertakes problem-solving (Kirton, 2003). Intra-group conflict is defined as the process emerging from perceived incompatibilities or differences among group members (De Dreu & Gelfand, 2008).

Research Questions

In this study, the Kirton-Adaption Innovation Theory was applied and evaluated for its efficacy in the context of superintendent-school board teams. Two research questions were explored. They were:

1. On superintendent-school board teams where conflict has or does exist, is there evidence of cognitive gap, as defined by A-I Theory, as a contributing factor?

2. Is there a significant relationship between superintendent KAI scores and their age and level of experience?

Mixed Method Design

These research questions could not be adequately addressed by purely a quantitative or qualitative research design. Instead, the questions begged a mixed-method design that combined the two. The collection and analysis of KAI scores as the

quantitative component identified governance teams where cognitive style may have been

a contributor to intra-group conflict and also tested assumptions of A-I Theory in the

context of superintendent-school board teams. Correlational analysis was performed

comparing KAI scores and demographics, which according to A-I Theory, should not be

statistically significant. This assumption plays a foundational role in the theory, and if

violated, brings into question the basic premises of A-I Theory, including the overall

construct of cognitive style (Kirton, 2000, 2003). Collection of KAI scores was a factor

in identifying superintendent-school board teams that may be "ripe" for conflict, based

upon the likelihood of cognitive gap.

The literature on qualitative research is consistent on when to use and not use

qualitative methodology (Creswell, 2013; Creswell & Plano Clark, 2006; Stake, 1995;

Yin, 2009). In this case, a mixed method approach was used as the qualitative component

added context and understanding that the quantitative data introduced. Creswell stated:

> We use qualitative research to follow up quantitative research and help explain
>
> the mechanisms or linkages in causal theories or models. These theories provide a
>
> general picture of trends, associations, and relationships, but they do not tell us
>
> about the processes that people experience, why they responded as they did, the
>
> context in which they responded, and their deeper thoughts and behaviors that
>
> governed their response. (Creswell, 2013, p. 48)

According to Creswell (2013), "qualitative studies have a baffling number of

choices or approaches" (p. 7). However, in social, behavioral, and health science

literature, five approaches predominate. They are: (a) Narrative, (b) Phenomenology, (c)

Grounded theory, (d) Ethnography, and (e) Case Study (Creswell, 2013). In an effort to

align the best qualitative approach to help answer research question one, all five were

evaluated for appropriateness. In this study, a Case Study approach was deemed as the

best model. Specifically, a sequential explanatory participation selection model was used

and conducted in two phases (Creswell & Plano Clark, 2006).

In prior quantitative and qualitative studies, A-I Theory has been well established

as a viable theory to explain a possible source of conflict (Clapp, 1993; Goldsmith &

Matherly, 1986a, 1986b; Kirton & McCarthy, 1985; Rickards & Gaston, 1995; Riley,

1993). This study builds upon prior research and applies A-I Theory and the KAI in the

context of the superintendent-school board team. Specifically, KAI scores were used to

identify superintendents who were likely to have an extreme cognitive gap (20 point or

more spread on KAI scores) with one or more board members. In cases where extreme

cognitive gap was present and some level of conflict had existed, there was an increased

chance the conflict may have been related to cognitive style. The qualitative component

was necessary to explore in-depth the types and potential sources of conflict on the

superintendent-school board team, and what if any of these were related to cognitive

style.

Study Design

A mixed method, sequential explanatory participant selection model was used for

this study and was conducted in two phases (Creswell & Plano Clark, 2006). The purpose

of Phase One was two-fold. First, the goal was to collect KAI scores and demographic

data on superintendents within the eastern Washington State region. These scores and

demographic data were used to produce descriptive statistics and to run correlational

analysis to evaluate the efficacy of A-I Theory in the context of superintendents in

eastern Washington State. The second purpose of Phase One was to identify superintendent-school board teams that may have or have had conflict where cognitive style could be a contributor to the conflict.

Administrating the Kirton Adaption-Innovation Inventory (KAI) to eastern Washington superintendents resulted in the collection of scores that could range from 32 to 160. Each superintendent's overall score placed him or her on a continuum where the mean, mode, median, range, and standard deviation were established for the sample. In theory, if a sample is large enough, the mean should be near the North American Mean of 95 with a standard deviation of 17 (Kirton, 2003). The KAI scores, based upon a five point Likert scale, fall into the category of ordinal data. However, ordinal data can be treated as continuous data for the purposes of correlational analysis with demographic data from the participants provided the required number of respondents participate (Field, 2013). This KAI data, along with the scores and demographic data collected from selected school board members, formed the quantitative component of this mixed method study.

Hypothesis. The primary focus on this study used qualitative methodology and was designed to identify and collect examples of conflict on superintendent-school board teams where cognitive gap may have been a contributor. A secondary focus used quantitative methodology to examine A-I Theory in the context of superintendent-school board teams. The quantitative analysis hypothesis was:

Hypothesis 1: There is no relationship between superintendent KAI scores and their demographics of age and level of experience.

Null Hypothesis 1: There is a significant relationship between superintendent KAI scores and their demographics of age and level of experience.

Population and sample. There are nine Educational Service Districts (ESDs) in Washington State serving 295 school districts in 39 counties. Initially established in 1969, their purpose is to "link local public schools with state and national resources" and to "allow districts to eliminate duplication of services, realize significant savings and receive special programs that might otherwise be unavailable to them" (ESD 101 website). Four of these ESDs (ESD 101, 105, 123, and 171) are located east of the Cascade mountains in a region known as eastern Washington State. These ESDs serve 129 superintendents and their 136 school districts. Seven superintendents serve in more than one district due to the rural nature of the region.

This study used a sample of convenience, leveraging the natural conduit of communications and structures the ESDs provide to the superintendent-school board teams they serve. The initial population for this study included all superintendents in eastern Washington State. Superintendents were asked to complete the KAI during a two-week window. An incentive for participation was the possibility of board participation in the KAI and a follow-up in-service at no charge. A minimum of 30 individual KAI scores were sought after to ensure enough data was available to run correlational analysis between superintendent KAI scores and their self-reported demographic data (Field, 2013).

Superintendent KAI scores and follow-up interviews were used to further identify five or more superintendent-school board teams where it was likely cognitive gap may have been a contributing factor to the conflict. From this list, it was planned that one to

five superintendent-school board teams would be identified and invited to participate in Phase Two of the study.

      Instrumentation. The Kirton Adaption-Innovation Inventory (KAI) was the instrument used to collect initial quantitative data. It has been used extensively in multiple fields and disciplines since it was first introduced in 1976 (Kirton, 1976, 2000, 2003, 2013). Originally a paper and pencil inventory, it has recently been set up to be taken on-line. In this study, the on-line process was used. The on-line KAI includes 32 descriptors which ask, "how easy or difficult it is to be a person who…" A 17- point Likert scale is used which is reduced to a five-point scale internally for computational purposes. Overall KAI scores can have a theoretical range from 32 to 160 with a theoretical mean of 96. The general population means of means developed in the initial studies is around 95 ($N = 2744$, $M = 94.76$, $SD = $ circa 17.0) (Kirton 1976, 2000, 2003).

      The KAI usually takes between five and 10 minutes to complete. Once submitted by the participant, the KAI is automatically scored and returned to the administrator for a quality check. The administrator receives the overall KAI score along with subscale scores for Sufficiency of Originality (SO), Efficiency (E), and Rule/Group Conformity (R). The administrator also receives notification if any scores are suspect. The normal reasons for suspect scores are one or more missing responses or too many neutral answers. Most inventories are returned meeting all standards. In this study, any suspect scores were evaluated on an individual basis in accordance with the Kirton Adaption-Innovation Inventory Manual (Kirton, 2013) and unless they significantly skewed the results, the scores were included in the descriptive statics and the analysis of relationships

between scores and superintendent demographics. Suspect scores were reported in the results section of the study.

Once the researcher received the KAI scores, the review usually took less than 30 seconds, and the scores were then eligible to be forwarded to the participant. If the researcher was by a computer or smart-phone when the participant submitted the inventory, the participant received his/her scores back in minutes. The participant received the overall KAI score and sub-scores embedded in an eight-page feedback document. The Kirton Inventory-Innovation Feedback Document gives background and explains the major components of A-I Theory, including the characteristics of adapters and innovators. On page seven, the participant's total KAI score is listed along with his or her sub-scale scores. A brief description of how to interpret these scores is also given.

In Phase One of this study, eastern Washington superintendents were sent a letter via e-mail requesting they participate in the study and inviting them take the KAI on-line. In Phase Two, selected board members were sent a like letter. The letter included instructions on how to take the KAI, some terms and definitions they would encounter that may be foreign to them, and an access link to the KAI and their unique access code. Access codes are purchased by the researcher and once issued and used, are no longer valid. Access codes are made up of 10 digits. The first three are letters and the last seven are numbers. The three letters are assigned by the researcher while the numbers are randomly selected by the computer software. For data collection in this study, SUPxxxxxxx was used for superintendents and BRDxxxxxxx was used for board members.

Data collection. An e-mail introducing and explaining the study (Appendix B) was sent out to all 129 superintendents in the eastern Washington region. A second e-mail requesting their participation in the study followed (Appendix C). Embedded in this e-mail was a unique 10-digit access code and link allowing the participant to take the KAI on-line. As part of the KAI, each participant was asked for demographic data including their age and gender.

The window for participants to complete the KAI was approximately two weeks (15 days), from Monday through Monday in March, 2017. Reminder e-mails were sent out at the end of the first week (Appendix F), on Thursday of the second week (Appendix G), and for some superintendents, on Friday of the second week (Appendix H).

Once scores were received and reviewed by the researcher, they were forwarded via e-mail to the participant, embedded in an explanatory electronic booklet. The e-mail encouraged follow-up questions and comments by the participant, via e-mail or personal phone call.

As the primary purpose of the study was to explore possible conflict between superintendents and one or more board members with extreme cognitive gap (20 points or more based upon KAI scores), superintendents with scores at least one standard deviation and ideally two standard deviations from the mean (either highly adaptive or highly innovative) were selected for further study in the qualitative phase. It was assumed due to normal distribution of the KAI in North American populations, a superintendent with a score one or more standard deviations from the mean would have extreme cognitive gap with one or more of his/her board members.

Participating superintendents were contacted by phone or e-mail and asked questions from Phase One Superintendent Interview Questions (Appendix B). The first four questions asked for additional demographic data to include years of service as a superintendent in their current district, the number of years they have served as a superintendent, the number of superintendent positions they have held, and the total number of years total they have served in a certificated position in public education. It also asked a series of questions concerning historic or current conflict(s) within their superintendent-school board teams and the likelihood cognitive style may be or has been a contributor.

From these interviews, five or more superintendent-school board teams were identified as, (a) likely possessing extreme cognitive gap between the superintendent and one or more board members, and (b) having or have had some form of recent conflict that may be related to cognitive style as identified by the superintendent. If they existed, it was planned that one to five teams would be invited to participate in Phase Two. If a relatively large number met the criteria, the superintendent-school board teams would be chosen on the basis of individual and organizational diversity to include gender of the superintendent and size of the school district as First Class (2000 or more students) or Second Class (below 2000 students) if possible.

Phase Two consisted of the KAI being administered to the members of selected boards. From the KAI scores, cognitive gap would be identified between individual board members and their superintendent. From this, follow-up interviews with selected board members took place via phone call provided the board member agreed. In all data collection including interviews, all ethical standards of research were adhered to,

including safeguards to keep all participants and school districts anonymous. Consent forms for superintendents (Appendix M) and board members (Appendix N) were completed.

Data Analysis

After data for each variable were collected, histograms as well as kurtosis and skewness were analyzed for normal distribution including the identification of outliers. All outliers were evaluated on a case by case basis. If considered problematic to the efficacy of the data set, winsorization was performed. Possible heteroscedasticity was checked for by visually inspecting scatterplots prior to correlation analysis.

Descriptive statistics were developed and included the sample mean, median, mode, range, variance, and standard deviation. This data was compared to Finch's findings (2013). Finch's dissertation is the only known study to use the KAI with school district superintendents. Kirton's Occupational Research Centre acts as a clearinghouse for studies and repository for data using the KAI. The identity free data from this study, along with Finch's findings will add to the database which can be used for future research.

For this study, the null hypothesis stated, "there is a significant difference between superintendent KAI scores and their demographics of age and level of experience." Pearson Correlation Coefficient, Kendall's tau, and Spearman's rho were used to analyze the data and test this hypothesis, checking for any significant violations of A-I Theory.

The Pearson Correlation Coefficient was selected as it is designed to show "the degree of linear relationship between two variables that have been measured on interval

or ratio scales" (Vogt & Johnson, 2011, pp. 284-285). All six variables analyzed in this study were considered either interval or ratio. Overall KAI scores are based upon a Lickert scale, which in some situations, are analyzed as ordinal data. However, if a sample is large enough, KAI scores can be treated as interval data (Field, 2013). As 44 superintendent KAI scores were collected for this sample, the data was treated as interval data in this study.

All variables related to experience level were measured in full years and were considered to contain ratio data. The Pearson Correlation Coefficient analysis requires an assumption of normal distribution. Data not meeting parametric requirements were treated as ordinal data where the mean of the sample, linear relationship of the variables, and normal distribution were not required. Non-parametric analysis including Kendall's tau and Spearman's rho were used for variables that did not meet parametric criteria. Specifically, variables that fell outside of Skewness and Kurtosis parameters, were treated as ordinal data for analysis in this study. Both Kendall's tau and Spearman's rho were designed to analyze ordinal data as well as interval and ratio, but use an analysis method based upon the rank order of data, thus not being dependent upon the same normal distribution and linear requirements of the Pearson Correlation Coefficient analysis. Instead, Spearman's rho analysis measures a monotonic relationship between variables and Kendall's tau measures strength of association of the cross tabulations.

A-I Theory posits there should not be any significant correlations between superintendents' KAI scores with age, years of service as a superintendent, and years of service in education. In alignment with A-I Theory, a significant correlation could exist between superintendents' KAI scores who are high or very high adaptors or innovators,

and the number of years they serve in a school district. Extreme cognitive gap often is a factor in an individual choosing to leave an organization (Kirton, 2000; 2003). This could apply to a superintendent choosing to leave a district earlier than the normal longevity period superintendents serve in a district.

It is also possible significant differences between the sample means of males and females could be found. Goldsmith (1984) reported a mean for United States males of 98 and for females, 93. Finch (2013) reported the mean for Chicago area male superintendents as 100.2 and for female superintendents, 103.5.

Qualitative data was collected through a follow-up interview process after the KAI was completed, either via e-mail or by telephone call. Interview questions included, (a) How many years have you served as the superintendent in your current district?, (b) How many total years have you served as a superintendent?, (c) How many superintendent positions have you had?, (d) How many total years have you served in education in a certificated position (administrator, teacher, counselor, etc.)?, (e) Do you feel your (KAI) score accurately represents you?, (f) Have you experienced any conflict with a current or past board member? If yes, please describe the conflict, (g) In your opinion, do you think cognitive style may have contributed to the conflict? If so, why do you think so? (Appendix B).

Indicators of adaptive and innovative behavior (Appendix A) included in the KAI feedback document (Kirton, 2000; 2003; 2013) were used as part of the follow-up interviews to identify specific instances where cognitive style may have or be contributing to the conflict.

Summary

It is critical the superintendent-school board team functions at a high level for multiple reasons, ideally all of them leading to successful teaching and learning resulting in student growth. Given any length of time, it is likely the governance team will be tasked to solve complex problems. The greater the cognitive diversity on the team, the more likely quality solutions will be explored and implemented, provided this diversity is well lead and managed to maximize the positive effects of task conflict. As the KAI identifies cognitive gap within a team, it may be a useful tool to predict and or identify cognitive style as a contributor to conflict. However, other than anecdotal stories that exist on an extremely limited basis, none of these cases of cognitive style and conflict have been documented and reported upon in the school governance literature.

As conflict is an extremely complex construct, an experimental or quasi-experimental design is not practical to set up within a superintendent-school board team. This is due to the plethora of variables that would need to be controlled for and the limitations of time and financial resources that such designs would require. Even correlational studies associating KAI scores with conflict are difficult to design due to the lack of valid and reliable instruments associated with conflict that can be used as a dependent variable. Various methods in qualitative research including observations are also difficult to use in this context. This is especially true as A-I Theory posits conflict related to cognitive gap usually appears when the team is stressed or pressurized through highly complex problems where the solutions are needed quickly, often associated with high stakes results. The likelihood of a researcher attending regularly scheduled school

board meetings and being able to observe and document conflict related to cognitive gap is relatively low as pressurized situations are difficult to predict.

Recognizing challenges exist, the usefulness of using A-I Theory and KAI scores in the context of the superintendent-school board team is still a valuable endeavor. Although it is not designed to be grounded theory (Creswell, 2013), as A-I Theory and its link to conflict are well documented, it is a small step to help remedy a void in the literature. Given its limitations, including the lack of generalizability of examples reported through a case study model, it is adding to a foundation in which follow-on research may build.

Chapter 4

Results

The purpose of this study was to discover the contribution, if any, cognitive style has on conflict within superintendent-school board teams in eastern Washington State. The Kirton Adaption-Innovation Theory (A-I Theory) was applied and evaluated for its efficacy in this context. The Kirton Adaption-Innovation Inventory (KAI) was the primary instrument used to identify the cognitive style of participating superintendents and board members. An interview process was used to gather additional demographic data along with qualitative information. The qualitative component included perceptions of superintendents and board members relating to their personal KAI scores, the existence of current or past conflict on their team, and if conflict has occurred or is present, the likelihood cognitive style may have been or is a contributor to their conflict. Two research questions were explored. They were:

1. On superintendent-school board teams where conflict has or does exist, is there evidence of cognitive gap, as defined by A-I Theory, as a contributing factor?

2. Is there a significant relationship between superintendent KAI scores and their age and level of experience?

To answer the two research questions, this study took place in two phases. The first stage of Phase One included the sampling of eastern Washington superintendents by requesting they complete the KAI online and was designed to collect overall and subscale scores. Phase Two involved an interview process of those who completed the KAI. The purpose of this stage was to collect additional demographic information to answer

Research Question Two and to help identify superintendent-school board teams where conflict has or does exist and may be related to cognitive style.

In this second stage, an option to complete the interview on-line was offered if more convenient for the superintendent and/or the answer to question seven, "Have you ever experienced any conflict with a current or past board member?" was "no." If conflict was reported and there was strong likelihood cognitive style may have been a contributor to the conflict, a phone interview took place.

The culmination of Phase One resulted in the collection of data to (a) identify superintendent-school board teams to participate in Phase Two, and (b) generate descriptive statistics for superintendent KAI scores and their demographics and to analyze these data for possible relationships.

Phase Two was designed to complete the following two purposes:

1. Collect participating board members' KAI scores to confirm assumed cognitive gap between the superintendent and one or more board members.

2. Seek board members' opinion if they think cognitive gap is/was a contributor to their current or past conflict to corroborate (or not) the superintendent's perspective.

In Phase Two, four of the 44 superintendent-school board teams (9%) were invited to participate. The criteria for teams to be selected and asked to participate in this phase were:

1. The superintendent had a medium (or higher) innovative (> 111) or a medium (or higher) adaptive (< 79) KAI score that he /she perceived as

accurate. (Note: as adaptive scores decrease in numerical value, they are considered higher on the adaptive scale). This type of score increased the chances the superintendent may have an extreme cognitive gap between one or more board members.

2.   The superintendent reported in the follow-up interview some type of past or present conflict with one or more board members and that cognitive style could be a contributor.

3.   The superintendent was interested in the study and found value in A-I Theory and the KAI.

4.   The board members were asked by the superintendent if they were willing to participate in the study and the majority (three or more) agreed.

5.   The superintendent was safe in his/her position and the conflict was not so severe that he/she was in danger of losing his/her position. This criterion was especially considered important, as the study was designed to do no harm to the critical relationships on a superintendent-school board team.

In Phase Two, 19 board members were asked to complete the KAI on-line. At the time of the study, one school board had only four members due to a recent vacancy. In this phase, eight board members completed the KAI and four participated in the interview process.

In return for superintendent-school board participation, the researcher offered to conduct an in-service for the team after the study was complete on A-I Theory and interpretation of KAI scores. The in-service was provided at no cost to the participants and took place in the team's district at a date and time that was conducive to both parties.

Population and Sample

The population for this study was comprised of all superintendents and selected board members in the region of eastern Washington State, which includes all public-school districts in the state east of the Cascade Mountains. The school districts in this region are supported by Educational Service Districts (ESD) 101, 105, 123, and 171. There are 136 school districts in the eastern Washington region served by 129 superintendents. Seven superintendents serve two districts simultaneously due to their small and rural nature. Of the 129 superintendents, 108 are male (84%) and 21 are female (16%). The districts range in size from eight students to over 30,000 students in Spokane, the largest city and school district in the eastern Washington region. Most of the districts in the region are considered Second Class districts with student populations below 2000 students, with a large percentage in rural communities where agriculture and related services are the primary industry. For example, of the 59 school districts ESD 101 serves, eight are First Class and 51are Second Class. All 295 districts within Washington State have school boards made of five directors except Seattle, the largest district in the state with seven members and 50,000 plus students.

All 129 superintendents in the region were sent an e-mail introducing the study during the week prior to the data collection window (Appendix C). A second e-mail explaining the study with a link and access code to complete the Kirton Adaption-Innovation Inventory on-line (Appendix D) was sent during the two-week period. Superintendents who did not participate on the first round received up to three reminder e-mails.

The initial data collection took place within a 15-day window from Monday to Monday in March, 2017. Reminders were sent out on Thursday of the first week (Appendix F) and on Thursday (Appendix G) and Friday of the second week (Appendix H). Of the 129 superintendents invited to participate in Phase One of the study, 44 completed the KAI for a response rate of 34%. Of the superintendents who participated, 38 were male (86%) and six were female (14%). At the time of this study, there were 108 male superintendents (84%) and 21 female superintendents (16%) in the region.

All KAIs were submitted on-line using a link and individual access code and scored automatically via centralized computer operated by the Occupational Research Centre in England. Results were instantly returned to the researcher for a quality check. Of the 44 completed KAIs, seven came back flagged as "suspect scores." In the scoring of the KAI, a suspect score can be triggered by one or more questions not answered, too many neutral answers, and/or imbalance of the predicted ratio of too easy and too hard responses. All suspect scores were looked at individually via Centre software. In this study, all were included as none of the seven were considered severe enough to misrepresent the overall and subscale scores.

After each KAI was received and checked for possible "suspect scores," the scores were immediately forwarded to the participant via e-mail. The participants' overall score and three sub-scale scores were embedded in and eight-page feedback document sent from the server. Following this, a follow-up letter was sent to the participant explaining the next steps in the study and the questions that would be asked in the interview (Appendix E). Within two days, a second e-mail was sent giving the option to respond to the interview questions via e-mail if the answer to question seven was no

(have you ever experienced any conflict with a current or past board member?) or the superintendent preferred to communicate this way instead of arranging a phone call. This e-mail also requested the superintendent sign a consent form to be interviewed. The consent form was sent via separate e-mail using DocuSign (Appendix M). All participants returned a completed consent form.

Data Collection

All public-school superintendents in eastern Washington State were invited to participate in Phase One of this study. Phase One was sub-divided into two parts. Part one involved completing the Kirton Adaption-Innovation Inventory (KAI) on-line. Part two was participating in an interview conducted via e-mail or by phone call. The interview questions were sent to the participant immediately after he/she received their KAI score.

Forty-one KAIs were completed during the Monday to Monday, 15-day data collection window. Three were completed during the third week and were included in this study for a total of 44. Of the 44, 33 superintendents completed the interview either by responding to the questions via e-mail or phone call. One interview was submitted after all computations were complete and is not included in the quantitative component of this report. However, some comments from the interview are included in the qualitative portion.

The purpose of Phase One was to collect superintendent KAI scores and identify superintendent-school board teams where cognitive style, specifically cognitive gap may be contributing to conflict. It was also designed to collect demographic data to address

research question two, "Is there a significant relationship between superintendent KAI scores and their age and level of experience?"

Descriptive Statistics

Descriptive statistics were generated and correlational data were analyzed using the Statistical Package for the Social Sciences (SPSS). For superintendents, there were 44 overall KAI scores, along with their subscale scores of Sufficiency of Originality (SO), Efficiency (E), and Rule Conformity (R) reported. The data were initially checked for normal distribution by analyzing histograms and testing for parametric parameters including skewness and kurtosis (+ or − 1.0) (Field, 2013). All four scores met requirements (Table 1). The overall KAI score mean for superintendents was 101.59 (N=44, SD=17.82). The median was 102.5 and the mode was 103. The mean for SO was 47.20 (SD=9.54), for E was 18.52 (SD=5.34), and R was 36.00 (SD=8.03) (Table 1).

In comparison to other studies, the mean of means for the general population is approximately 95 with a standard deviation of approximately 17 (Kirton, 2013). For a mean of 101, the expected subscale scores are, 43 for SO, 20 for E, and 38 for R. For a mean of 102, the expected subscale scores are 44 for SO, 20 for E, and 38 for R. The SO mean for this superintendent sample is approximately 6.5 points more innovative than the general population SO expected mean. The superintendent subscale SO mean of 47.20 was 4.2 points more innovative than expected for an overall KAI score of 101, while the means of E (18.52) and R (36) were approximately 1.5 and 2 points more adaptive than expected (Table 1).

Even though individual KAI scores are considered on a continuum from 32 to 160, with a theoretical mean of 96 (Kirton, 2000, 2003), overall scores are often placed in

one of eight categories. The categories are, Very Highly Adaptive (32-49), Highly

Adaptive (50-64), Moderately Adaptive (65-79), Mildly Adaptive (80-95), Mildly

Innovative (96-110), Moderately Innovative (111-124), Highly Innovative (124-139), and

Very Highly Innovative (140-160). In this study of 44 completed instruments, 17 overall

KAI scores were in the Adaptive category (38.6%) and 27 in the Innovative category

(61.4%). In the Adaptive category, one score was within the range of Highly Adaptive

(2%), four were Moderately Adaptive (9%), and 12 were Mildly Adaptive (27%). No

score was Very Highly Adaptive. Thirteen scores were Mildly Innovative (30%), ten

were Moderately Innovative (23%), three were Highly Innovative (7%), and one was

Very Highly Innovative (2%).

Table 1

Descriptive Statistics of Eastern Washington State Superintendents' Overall KAI scores

and Subscale Scores of SO, E, and R.

	KAI	SO	E	R
Valid	44	44	44	44
Missing	0	0	0	0
Mean	101.5909	47.2045	18.5227	36.0000
Median	102.5000	49.5000	18.0000	37.5000
Mode	103.00	53.00	16.00	38.00
Std. Deviation	17.81992	9.53959	5.34176	8.03481
Skewness	-.143	-.643	.435	-.189
Std. Error of Skewness	.357	.357	.357	.357
Kurtosis	.009	-.427	-.685	-.270
Std. Error of Kurtosis	.702	.702	.702	.702
Range	82.00	38.00	20.00	35.00
Minimum	58.00	26.00	10.00	19.00
Maximum	140.00	64.00	30.00	54.00

The Kirton Adaption-Innovation Inventory asks for one's name, age, occupation, and level of education. Of the 44 superintendents who completed the KAI, 38 reported their age as requested by the inventory. Six left it blank or inserted zero. The mean age of superintendents in this sample was 55.87 ($SD = 9.42$) while both the median and modes were 58.0. The range was from 36 to 85 years old (Table 2).

Table 2

Descriptive Statistics of Eastern Washington Superintendents' Age and Experience Level

	Age	In District	Years as Supt	Positions	Total Years
Valid	38	33	33	33	33
Missing	6	11	11	11	11
Mean	55.8684	5.9091	10.1818	2.0606	28.4545
Median	58.0000	4.0000	6.0000	1.0000	30.0000
Mode	58.00	4.00	4.00	1.00	31.00
Std. Deviation	9.42444	5.02720	8.48327	1.65717	11.24470
Skewness	.318	1.532	1.447	2.003	.526
Std. Error of Skewness	.383	.409	.409	.409	.409
Kurtosis	1.420	2.267	2.229	4.234	.693
Std. Error of Kurtosis	.750	.798	.798	.798	.798
Range	49.00	21.00	34.00	7.00	52.00
Minimum	36.00	1.00	1.00	1.00	9.00
Maximum	85.00	22.00	35.00	8.00	61.00

Summary and comparisons of female and male KAI scores are not reported in this study due to the small sample of female superintendents who completed the KAI ($N = 6$) and the relatively small percentage of female superintendents who serve in the eastern Washington region ($N = 21$). Due to the wide range of female scores in this sample, descriptive statistics and correlations could be misleading. Also, if reported, a strong probability exists KAI scores could be associated with specific superintendents.

Demographic data relating to ethnicity were not collected or reported on in this study as this information was not considered pertinent to the research questions.

Research Question One

The original intent in the design of this study was to answer Research Question One by exploring in-depth, one to five cases where a high probability cognitive gap was a contributor to an existing or past conflict. These cases were identified in Phase One, where the superintendent had a highly adaptive or a highly innovative KAI score and reported he or she had been engaged in a conflict where cognitive gap may have been a factor. Four cases were identified and the superintendent-school board team was invited to participate. In all four, the superintendent sought cooperation from the board members for the study. These cases were explored and in each, a conclusion was made that there was evidence cognitive gap had contributed to the conflict.

Unfortunately, none of the cases were explored as in-depth as originally planned, due to limited board member participation. Only eight board members out of 19 who were invited completed KAIs. Of these, four were available and agreed to be interviewed via phone call. However, although limited, each board member who did participate gave valuable input, which corroborated with their superintendent's perception of the conflict.

Along with the challenge of participation, another "roadblock" requiring a detour was discovered through the interview process. The more normal case study method of examining and articulating extensive detail about each case was deemed inappropriate for this study. Consequently, due to the unique nature of each case and sensitivity of the reported conflict, none of the cases are specifically reported upon in this section. If reported and elaborated upon as individual cases, there is a strong likelihood the district,

as well as the superintendent and the board members could be identified, including their KAI scores. Instead, collective examples and quotes are offered as evidence that cognitive gap has played a role in a conflict, but details are not specific to a case. Again, a high priority in this study was to do no harm, especially given the critical nature of superintendent-board relationships.

Research Question One asks, "On superintendent-school board teams where conflict has or does exist, is there evidence of cognitive gap, as defined by A-I Theory, as a contributing factor?" Based upon KAI scores and interview responses in Phase One (superintendents) and Phase Two (board members), there is evidence to answer Research Question One in the affirmative. The following sections support this statement.

Efficacy of KAI individual scores. The qualitative component of the interview/questionnaire started with questions five and six. Question five asked, "Have you read the Kirton Adaption-Innovation Inventory Feedback Document sent to you after you submitted your KAI? If so, do you have any questions?" Most superintendents and board members responded with a one-answer "yes" to the first part and all answered "no" to the second part. Two stated, they did not read it all, but read enough to understand it.

Question six asked, "On page 4 of the feedback document, the characteristics of adaptors and innovators are listed. Given this list and your own KAI score, do you feel your score accurately represents you?" Of the 33 superintendents who participated in the interviews, 32 answered this question in the affirmative, the majority with a one-word answer of yes. Some elaborated on their answer. For example, one superintendent stated, "Yes, I believe it is an accurate representation of me and the areas that I find easy or hard" (Superintendent A). Another said, "Yes. The score is a fair representation of the

way I believe I interact with others" (Superintendent B). Others commented, "Yes, I think it was pretty accurate" (Superintendent C) and "I think it does reflect my tendencies and style" (Superintendent D). Another reflected, "The more thoroughly I read it, the more I agreed that it was a fairly accurate reflection of my leadership style" (Superintendent E).

Some answered yes and elaborated more. For example, one superintendent said, "Yes, I think the total score and subscale scores are a fair representation of my tendencies. I am more inclined to adaptive approaches but feel I have a good balance on when to use innovative approaches" (Superintendent F).

Three superintendents answered yes, with qualifications. One said, "Overall, yes I do generally agree with who I am, according to the test. However, I do feel I'm easy to work with, regardless of whom I'm dealing with. I'm always open to new ideas from others and have learned to listen. I know that I could improve my communication skills; I don't always follow-up with others as well as I should. The decisions I make are unbiased and fair, and I always try to perceive another's situation as if I was in their shoes. Based on these factors, I don't know if I'm as far to the 'left' on the scale, but my tendencies certainly do lie therein" (Superintendent G). Another commented, "Somewhat…hard to wrap my head around a quick inventory that captures the complexity of all the skills and characteristics" (Superintendent H).

The third superintendent emphasized the need to account for the context. He/she stated:

> I guess it does but it also would depend upon the day, what conflict I had going on, and as I was trained, you cannot get answers to specific questions ahead of time when you are dealing with people because things change, some momentarily.

No matter what answer you get to a specific issue or question it may be right,

wrong or in between on different days or circumstances because ultimately it will

depend upon the "situation and the terrain." I think you will have the same trouble

we all have when you try and measure human activity with a pencil, paper and

calculator. I don't believe it can be done. Are not all of us different for a variety

of reasons? We are different in each set of circumstances and at different times.

And we should be because no two circumstances are exactly the same even

though they are similar; therefore what leadership role or effort works in one will

not work as well in two. How can you objectively measure performance or,

maybe more importantly, results? I once had an A.D. who was going to develop a

book listing all types of violations of an athletic code and corresponding penalties.

He gave up after a couple of years with over 300 pages. How much beer/ was

booze worse than beer/did the time of day matter/ past conduct/ age/ grade

point/parents etc. Well you get my point like Socrates with his lamp looking for

an honest man. We ended up having a court made up of faculty that passed

judgment on violations like a real court. Worked like a charm. Two kids with

similar violations, different circumstances, different penalties. Guess what I am

saying is that I believe it is very, very difficult to codify human behavior in any

meaningful way because you, and everything around you, change at any given

instance. (Superintendent I)

The one superintendent who answered "no" to question six had reservations both

on his/her score and the theory itself. He/she stated, "The explanation regarding the score

is very obtuse and subjective. I tend to view myself as a situational leader and the score

represents someone toward the innovative style. I realize this model indicates style doesn't really change, but you learn behavior to adapt. Not sure I agree with the model" (Superintendent J).

Superintendent-School Board Conflict

Question seven of the interview asked about superintendent-board member conflict. Before the question was asked, conflict was defined as, "A process that begins when an individual or group perceives differences and opposition between itself and another individual or group about interests and resources, beliefs, values or practices that matter to them." Following the definition, it was emphasized conflict can be both positive and negative. The interview questionnaire stated, "Please note: In accordance with the definition above, the existence of conflict on a superintendent-school board team should not always be perceived as negative. Some conflict can contribute to enhanced problem solving and other positive interactions."

Question seven asked, "Given this definition, have you ever experienced any conflict with a current or past board member?" Of the 33 superintendents who completed an interview, 18 (55%) responded yes to this question, most with some type of qualifier. Thirteen responded no (39%), and two did not answer (6%). All board members who completed an interview agreed with their superintendent that conflict was present or had taken place on their team.

Of the low-level conflicts reported upon, one superintendent stated in response to question seven, "No. At least nothing worth mentioning. Very, very minor if considered 'conflict' at all. Probably more in the category of "minor disagreement" (Superintendent K). Another superintendent stated, "individual members of the board and I have

expressed differences in our opinions about certain practices" (Superintendent L). Another one commented, "Nothing that has escalated itself to a level that could not be resolved or impacted personal relationships. That may be why I survived seventeen years. I think maybe my ability to move between adaptive and innovative as the need presents itself helped" (Superintendent F).

Other participants reported more significant conflict with one or more board members. Role clarity between the superintendent and the board was mentioned. For example, one participant commented, "The conflict has usually revolved around the conceptions of the role of the superintendent and the role of the board in a highly functional district" (Superintendent M). Another said, "The conflicts I have experienced are usually around decision making authority" (Superintendent C).

Often, the decision-making authority pertains to personnel. One superintendent stated:

Our most current conflict is in regards to teaching personnel. Several board members have negative opinions about teaching staff within the district that differ from evaluation data. Conflict has risen about how does the district move personnel out of the district even if the administration does not agree with the community and the board. The board does no observations of personnel but is responding to complaints of students and parents. It is a fine line to walk to be loyal to staff and answer to the board. (Superintendent N)

Another superintendent gave an extensive answer to question seven that reflects his/her perspective. He/she stated:

Yes. On several occasions. Board members often are elected on single issues and have promised to "fix the problem." Conflict of all kinds then appear as the individual board member finds that he/she is powerless as an individual to "fix" anything. Also the superintendent must establish that (1) the board sets policy (direction) and the superintendent carries out that policy (the board must not be allowed to get involved in the administration of that policy) (2) the board and the superintendent have different responsibilities and each must not get involved in the others business. I have used the example and explained in detail with each board with which I have worked that: If we were going to take a ship from Seattle to Japan you as a board tell me where you want to take the ship, the time-line, where to stop, etc. But when that decision is made I will steer and basically run the ship and you as a board or as individual board members STAY OFF THE BRIDGE. You cannot compromise on this issue.!!! (Board Member I)

Athletics were also a source of conflict commented upon, especially in more rural districts. For one district, a coach being fired created significant conflict. Another district chose to disband an athletic compact (combined sports programs) with a neighboring district which created a level of tension between the superintendent and some board members. One superintendent stated, "I am interested in a balanced approach to school priorities, but many on my board are very much athletics oriented" (Superintendent D).

Another area reported upon was trust and confidentiality. One commented, "A past school board member would often not have faith or trust in the superintendent (me) or fellow board members and/or building principals. I had to confront this board member (in a professional and confidential manner) several times" (Superintendent H). Another

stated, "With a previous board, two members often wanted confidential information that was not information they should have" (Superintendent O).

Many superintendents stressed the importance of positive conflict. For example, one said:

> In my experience if there is no conflict (hopefully friendly) between the superintendent and the board, one will take over completely with eventual disaster. The board was elected to set the parameters and direction of the district while the superintendent was appointed to carry out that direction. Obviously there has to be healthy conflict between the two or one of two things happen: (1) the board ends up running the day-by-day issues within the school or (2) the superintendent runs the whole shooting match. Either will eventually result in disaster. Anyone who has been in this business more than 24 hours and has half a brain knows this. Contrary to popular belief conflict (healthy, polite, and even friendly) is necessary and thank goodness, unavoidable. (Superintendent I)

Cognitive style and conflict. Answers from superintendents and board members to interview questions support an affirmative answer to Research Question Two. For those superintendents who reported some form of current or past conflict between themselves and one or more board members, they were asked, "In your opinion, do you think cognitive style may have contributed to the conflict(s). If so, why do you think so?"

None of the superintendents who reported conflict believed cognitive style was the sole or even primary contributor to their conflict. Their board members agreed with their assessment. This opinion was based upon their completing the KAI and reading the eight-page feedback document that explains A-I Theory and how to interpret their scores

embedded in the document. However, nine of the 18 superintendents who reported

conflict stated cognitive style and more specifically, cognitive gap could be a

contributing factor to their current or past conflict.

Some in answering question eight recognized cognitive style could be a

contributor, but did not offer a definitive yes or example. For example, one said,

"Cognitive Style may have been a contributing factor. (However) It really was more of a

conversation about priorities of the board from me" (Superintendent D). Another said, "I

am not so sure that is the sole cause of it" (Superintendent C). Another answered, "Yes, I

believe we have different mental models and that makes us think differently from one

another" (Superintendent M).

Five superintendents answered question eight with a definitive no. For example,

one stated, "No. In both cases it was not cognitive style that contributed but two

individuals with a long history of needing to be a winner in any conflict" (Superintendent

O).

Six superintendents commented it was very likely cognitive style is or was a

contributing factor to their conflict. One of these superintendents would be considered

highly adaptive based upon his/her KAI score and the other five would be considered

moderately or highly innovative.

The highly adaptive superintendent had a KAI score lower than 64. At the time of

this study, no large-scale change was proposed or taking place in the school district. He

or she described conflict around the perception that one or more board members had the

opinion the superintendent was not aggressive and confrontational enough and possibly,

"too nice." This perception was supported by a board member who was also moderately

adaptive (KAI score below 79) and felt the superintendent was very appropriate in how he or she approached conflict and sought collaboration. One or more board members who were perceived to have a different perspective than the superintendent on this issue had KAI score(s) that were innovative. In this case, an extreme cognitive gap was present between the superintendent and one or more board members. The superintendent also confirmed the characteristics of Adapter fit him or her well (Appendix A). One or more board members in this case were perceived to be more aligned to some of the descriptors of an Innovator (Appendix A).

The other five superintendents, including those that participated in Phase Two of the study, were all on the innovative side of the continuum. One of the Moderately Innovative superintendents (KAI score higher than 111), commented he/she was, "Low on the patience scale," (Superintendent P) and was frustrated with a slow-moving board on some important changes they were trying to implement as a district.

All the highly innovative superintendents had or were suggesting significant change to some aspect of their current or prior district, including resetting boundaries, exploring consolidation with another district, renegotiating athletic compacts, changing grade level configurations, etc. All superintendents felt strongly the moves were in the best interest of children and were the right thing to do. Each suggested change is/was considered "controversial" and created some level of tension between the superintendent, school board, district staff, and community. In all cases, the superintendent was willing to confront the controversy and proceed with the proposed change(s), even though some of this resistance came from within their school board.

Comments made by board members who were interviewed concerning superintendents promoting these changes were largely supportive of the effort and shared in detail how their superintendent did meet many of the characteristics of Innovators. This was especially agreed upon in terms of the desire to do the right thing, regardless of the level conflict experienced and how "outside the box" the proposed change was perceived. These superintendents were also known to generate many ideas, some of them considered not practical or even doable by some board and community members. Many ideas generated by these superintendents were quite controversial, pushing against accepted norms and challenging long standing traditions in the district and community. One board member commented, "You either love or hate the superintendent. There is no in-between" (Board Member A). This board member's perception and description of his or her superintendent fit many of the descriptors of an Innovator (Appendix A) including one who, "Could be said to search for problems and alternative avenues of solutions, cutting across current paradigms," and "often challenges rules, has little respect for past custom." This board member, although supportive of proposed changes, acknowledged there was strong opposition to various proposals by some other board members.

Although the number of KAIs completed by board members were limited, at least one was submitted from each of the four boards, confirming extreme cognitive gap existed in each of the superintendent-school board teams selected in Phase Two of this study. In some cases, a gap of 42 and 48 points separated the superintendent and board member. In each case, comments made by the superintendent and board members confirmed they perceived at least some of the characteristics of Adapter and Innovator were present on their team and in some way, contributed to their conflict. Again, none

believed cognitive gap was the sole contributor. However, all saw it as a factor. Although

not conclusive and based primarily on perception of those interviewed, evidence exists to

answer Research Question One as yes. On superintendent-school board teams where

conflict has or does exist, there is evidence of cognitive gap, as defined by A-I Theory, as

a contributing factor.

Research Question Two

Research Question Two asks, Is there a significant relationship between

superintendent KAI scores and their age and level of experience? The quantitative data

below supports a positive relationship between KAI scores and age of superintendent,

thus accepting this component of the null hypothesis. It also supports a conclusion of no

relationship between KAI scores and the superintendent experience levels, thus rejecting

this component of the null hypothesis. The following findings support these conclusions.

Correlational analysis. Superintendent KAI scores and demographics including

age, years in current district, the number of superintendent positions held, total years

served as a superintendent, and total years of service in K-12 public school education

were analyzed for parametric characteristics using histograms, checks for skewness and

kurtosis, and scatterplots. KAI scores and total years in K-12 public school education met

parametric requirements (Table 2). Years in district, number of positions as a

superintendent, and total years as a superintendent did not meet parametric requirements

based upon skewness and kurtosis being out of parameters (Table 2).

The age category also did not meet parametric requirements. One superintendent

in the sample was 85 years old and significantly skewed the data in multiple categories

(age, number of positions as a superintendent, and years in education). As this

participant's age was at least three standard deviations from the mean, this age was

winsorized to the next oldest participant (69 years old). This process brought the age

sample into parametric parameters for both skewness and kurtosis (Table 3) and allowed

the Pearson Correlation Coefficient analysis to be used for KAI scores, age, and total

years in education. It also reduced the probability of encountering a Type One error for

the null hypothesis (Table 3).

Table 3

Superintendent KAI Scores and Age Meeting Parametric Parameters for Skewness and

Kurtosis.

	KAI	Age
Valid	44	38
Missing	0	6
Mean	101.5909	55.4474
Std. Deviation	17.81992	8.38821
Skewness	-.143	-.475
Std. Error of Skewness	.357	.383
Kurtosis	.009	-.360
Std. Error of Kurtosis	.702	.750

Scatterplots were generated to check for heteroscedasticity for overall KAI scores

with superintendents' age (Figure 1) and overall KAI scores with superintendents' total

years of public education service in a certificated position (Figure 2). Visual inspection of

both scatterplots indicated reasonable homoscedasticity, enabling the use of the Pearson

Correlation Coefficient analysis with these three variables.
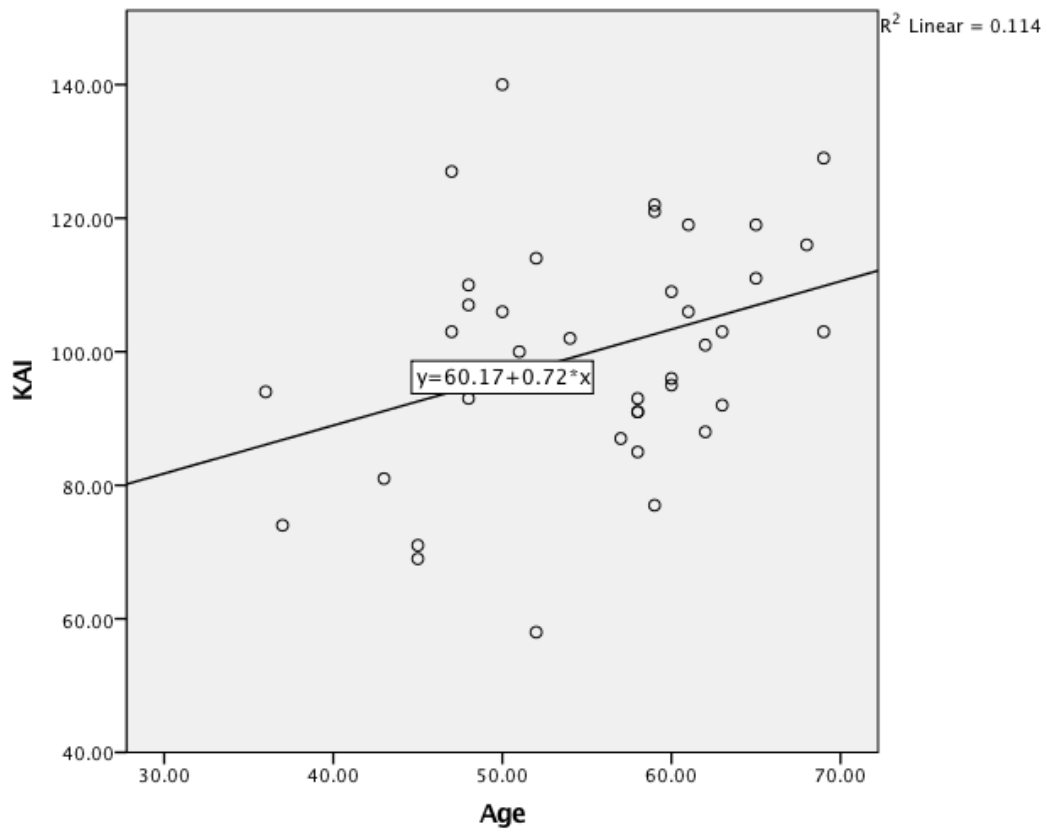
Figure 1. Eastern Washington superintendents' Age and Overall KAI score. Scatterplot

developed from SPSS to check for heterogeneity. It includes one age outlier score

winsorized from 85 to the next highest age of 69.
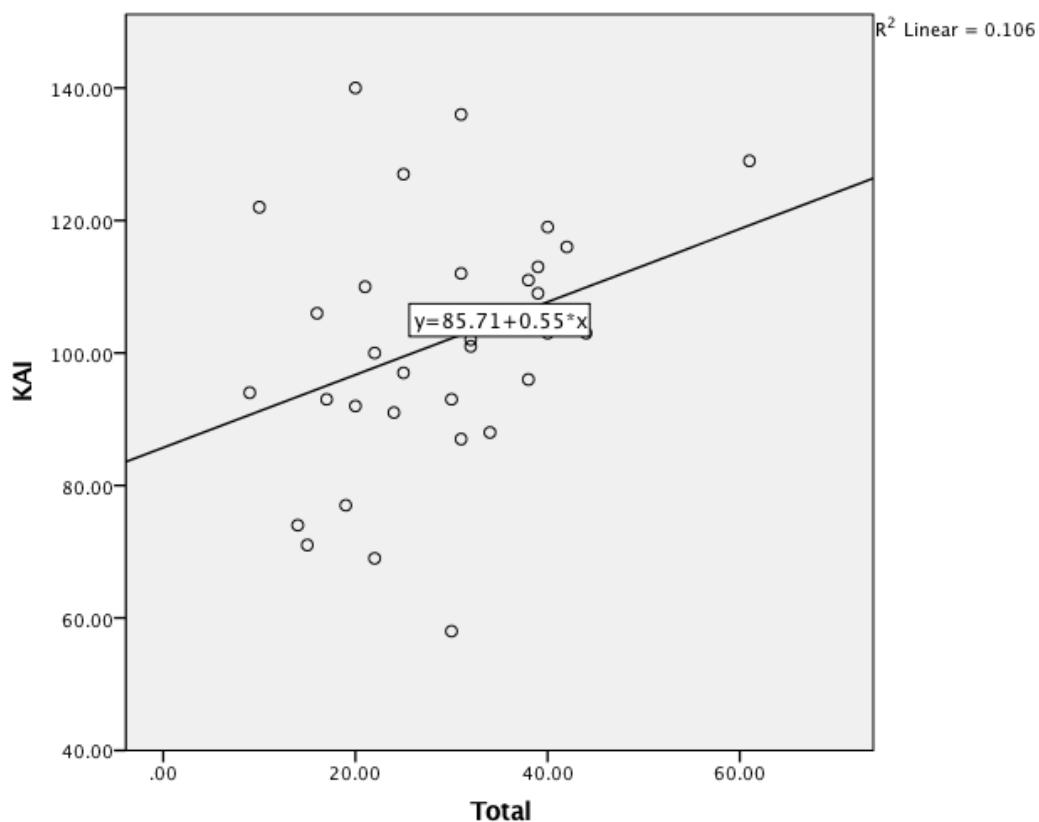
Figure 2. Eastern Washington superintendents' Total Number of Years in Public

Education Certificated Position and Overall KAI score. Scatterplot developed from SPSS

to check for heterogeneity.

For the relationship between KAI scores and age of superintendents, the Pearson's

Correlation Coefficient was used for analysis since both variables were within parametric

standards. The significant correlation between KAI scores and age ($r = (37).338, p < .05$)

was not expected and supports the acceptance of the null hypothesis, at least for this

component of the four demographic statistics tested (Table 4). No significant correlation

was found between superintendent KAI scores and the number of years they had served

in K-12 public education (Table 5).

Table 4

Pearson Correlation Coefficient of Eastern Washington Superintendent Overall KAI

Scores and Age.

		KAI	Age
KAI	Pearson Correlation	1	.338*
	Sig. (2-tailed)		.038
	N	44	38
Age	Pearson Correlation	.338*	1
	Sig. (2-tailed)	.038	
	N	38	38

*. Correlation is significant at the 0.05 level (2-tailed).

Table 5

Pearson Correlation Coefficient of Eastern Washington Superintendent Overall KAI

Scores and Total Years of Service in K-12 Education

		KAI	Total
KAI	Pearson Correlation	1	.325
	Sig. (2-tailed)		.065
	N	44	33
Total	Pearson Correlation	.325	1
	Sig. (2-tailed)	.065	
	N	33	33

The non-parametric procedures, Kendall's tau and Spearman's rho were used to

analyze the relationships between KAI scores and the three variables not within

parametric standards. Winsorization was not performed on these variables as Spearman's rho and Kendall's tau are not dependent upon equal distribution of the sample for analysis (Table 6).

Analysis results from Kendall's tau and Spearman's rho showed no significant correlation between superintendent KAI scores and years in the district ($r_t(32) = .024$, $p = .851$; $r_s(32) = .032$, $p = .859$), number of years as a superintendent ($r_t(32) = .117$, $p = .350$; $r_s(32) = .170$, $p = .344$), or the number of superintendent positions ($r_t(32) = .239$, $p = .081$; $r_s(32) = .281$, $p = .133$). These findings support the null hypothesis. A moderately strong relationship was shown between KAI scores and the number of superintendent positions, but this did not meet the .05 significance level for a two-tailed test (Table 6).

Table 6

Descriptive statistics of eastern Washington State superintendents' level of experience

	Years in District	Years as Supt	# of Positions
Valid	33	33	33
Missing	11	11	11
Mean	5.9091	10.1818	2.0606
Std. Deviation	5.02720	8.48327	1.65717
Skewness	1.532	1.447	2.003
Std. Error of Skewness	.409	.409	.409
Kurtosis	2.267	2.229	4.234
Std. Error of Kurtosis	.798	.798	.798
Range	21.00	34.00	7.00
Minimum	1.00	1.00	1.00
Maximum	22.00	35.00	8.00

A significant correlation exists in the data between the number of years the superintendent has served in their current district and the number of total years they have served as a superintendent. A significant correlation also exists between the total number of years served as a superintendent and the number of superintendent positions the participant has held. Both Kendall's tau and Spearman's rho were consistent in these findings. These significant correlations are logical and were expected (Table 7).

Table 7

Correlations of eastern Washington State superintendents' KAI scores and level of

experience.

			KAI	Dist	Supt	Posits
Kendall's tau b	KAI	Correlation Coefficient	1.000	.024	.117	.239
		Sig. (2-tailed)		.851	.350	.081
		N	44	33	33	33
	Dist	Correlation Coefficient	.024	1.000	.529**	-.017
		Sig. (2-tailed)	.851		.000	.904
		N	33	33	33	33
	Supt	Correlation Coefficient	.117	.529**	1.000	.552**
		Sig. (2-tailed)	.350	.000		.000
		N	33	33	33	33
	Posits	Correlation Coefficient	.239	-.017	.552**	1.000
		Sig. (2-tailed)	.081	.904	.000	
		N	33	33	33	33
Spearman's rho	KAI	Correlation Coefficient	1.000	.032	.170	.281
		Sig. (2-tailed)		.859	.344	.113
		N	44	33	33	33
	Dist	Correlation Coefficient	.032	1.000	.626**	-.035
		Sig. (2-tailed)	.859		.000	.847
		N	33	33	33	33
	Supt	Correlation Coefficient	.170	.626**	1.000	.673**
		Sig. (2-tailed)	.344	.000		.000
		N	33	33	33	33
	Posits	Correlation Coefficient	.281	-.035	.673**	1.000
		Sig. (2-tailed)	.113	.847	.000	
		N	33	33	33	33

**. Correlation is significant at the 0.01 level (2-tailed).

Chapter 5

Discussion

Research Question One

Research Question One asks, "On superintendent-school board teams where conflict has or does exist, is there evidence of cognitive gap, as defined by A-I Theory, as a contributing factor?"

The method chosen to answer this question was not ideal and has many limitations. In the best case, an experimental or quasi-experimental design would have been used to support causality of cognitive gap to conflict. However, the plethora of variables that would need to be controlled for and the amount of time and financial resources that such designs would require are problematic in educational settings. Even correlational studies associating KAI scores with conflict are difficult to design due to the lack of valid and reliable instruments associated with conflict that can be used as a criterion variable. Various methods in qualitative research including observations are also difficult to use in this context. This is especially true as A-I Theory posits conflict related to cognitive gap usually appears when the team is stressed or pressurized through highly complex problems where the solutions are needed quickly, often associated with high stakes results (Kirton 2000, 2003). The likelihood of a researcher attending regularly scheduled school board meetings and being able to observe and document conflict related to cognitive gap is relatively low as pressurized situations are difficult to predict. Even if they could be predicted, many of these meetings would likely be held in executive session which are closed to the public making them non-observable to a researcher unless invited into the meeting.

Instead, the answer to this question was provided by superintendents who completed the KAI and interview and acknowledged they had or currently have conflict on their superintendent-school board team. Question eight asked them, "In your opinion, do you think cognitive style may have contributed to the conflict(s). If so, why do you think so?" The accuracy of their answer was dependent upon the superintendent's understanding of A-I Theory and knowledge of their own scores. It also depended upon their perception of the conflict they had reported. The relative strength of the answer to Research Question One was also dependent upon the participation of board members in Phase Two of this study.

Phase Two was designed to collect board member KAI scores and corroborate (or not) the superintendent's perception of cognitive gap contributing to their conflict. Collection of the board members' KAI scores were to confirm actual cognitive gap. There is a strong probability a superintendent with a high adaptive or high innovative score has a cognitive gap between one or more board members. But this probability is an assumption which can only be supported with actual KAI scores for comparison. Like superintendents, board members' answers to the interview were also dependent upon their understanding of A-I Theory, KAI scores, and their perception of the conflict.

Acknowledging all these limitations, evidence from this study supports an affirmative answer to Research Question One. Of the 18 superintendents who stated they had or have conflict on their superintendent school board team, nine of these also believe cognitive gap was or could be a contributor. None of these superintendents believed it was the sole source or even the primary contributor. However, all nine stated they understood A-I Theory including the characteristics of adaptors and innovators, knew

their KAI score and believed it was accurate, and stated cognitive gap relating to how one approaches problem solving could have contributed to the conflict. In five of these cases, the superintendent had a KAI score at least one standard deviation from the mean of means of the general population. One superintendent was Highly Adaptive with a score of 58. Four superintendents had Innovative scores of 119, 122, 129, and 136.

A few superintendents with mid-range scores reported cognitive gap could be contributing to their conflict. These could be cases where one or more board members had an extreme KAI score on the Adaptive or Innovative side of the continuum. This possibility was not investigated in this study due to resource limitations, but likely does exist and could be examined in future research.

Possibly the most significant finding was many of the superintendents who reported conflict and possess high Innovative KAI scores were embarking (or had embarked) on a large-scale change within their district. These changes involved consolidating of districts, modifying internal school boundaries, changing grade configurations in schools, and renegotiating athletic compacts. All these changes can be considered "controversial" and are in line with the type of direction a high innovator may pursue (Appendix A). Each one of these superintendents had a strong drive to do, "what is best for kids." They perceived their proposed changes as "the right thing to do" and were willing to engage in conflict to make the change happen. These findings parallel Finch's observations of superintendents who were high innovators and possessed a "strong sense of motivation and low self-doubt" (Finch, 2013, p. 265).

Research Question Two

The Kirton Adaption-Innovation Theory posits cognitive style is developed early on and unlike creative capacity, does not change over time, even with experience and training. Even though one's KAI score should remain relatively constant and not drastically change over a lifetime, one can develop skills to work effectively outside of one's preferred style by coping. Given this, there should not be a significant correlation between KAI scores and age or experience level (Kirton 2000, 2003).

A secondary purpose of this study was to examine this premise in the context of superintendent-school board teams. Research Question Two asked, "Is there a significant relationship between superintendent KAI scores and their age and level of experience?" To answer this question, the following hypotheses were developed:

Hypothesis 1: There is no relationship between superintendent KAI scores and their demographics of age and level of experience.

Null Hypothesis 1: There is a significant relationship between superintendent KAI scores and their demographics of age and level of experience.

In this study, Null Hypothesis One was partially accepted for the demographic of age, but was rejected for demographic data related to the superintendent's level of experience including number of years served in current district, number of years served as a superintendent, number of superintendent positions held, and total number of years in K-12 public education in a certificated position. The sample of 44 superintendents in this study met parametric requirements for the variable of age, thus allowing the use of the Pearson's Correlation Coefficient Analysis to be used on KAI scores and age. A

significant relationship was found between KAI scores and the age of superintendents using a two-tailed test at the .05 probability level ($r = .34$, $p = .038$).

Most prior studies using the KAI support no relationship between KAI scores and age. In the literature review, one study was found that contradicted this. In a study looking at the relationship between the KAI and the Myers-Briggs Type Indicator, "a significant positive relationship was also found between Kirton scores and age ($r = .43$, $p = .001$)" (Jacobson, 1993, p. 1134). Her study of 54 "top managers and executives" of service-sector occupations in the eastern and Midwestern United States, included 44 men and 10 women. Although a relatively small sample, this finding contrasts with A-I theory that gender, age, and socioeconomic status have only a "very slight" relationship to scores on the KAI (Jacobson, 1993).

The partial rejection of the null hypothesis in this study relating to age is worth examining further. Of course, on one end it could be used as evidence challenging a basic premise of A-I Theory. Given the large number of studies that have not found a significant correlation between the two variables of KAI scores and age and the relatively small sample size of this study, it would be misleading to put too much weight on this finding. However, the correlation was significant at a comparable level to Jacobson's (1993) and the various roles of superintendents could be much like that of "top managers and executives" of service–sector occupations. These two factors beg multiple questions. Is it possible people who rise to the executive level and serve near or past retirement age tend to be more innovative? Are individuals who fall on the innovative side of the continuum more likely to work in their retirement years? In this study for example, all the superintendents who were 60 years or older except for two ($n = 14$) were in the

innovative category with scores from 101 to 136. As no causal conclusions can be gleaned from correlations, it is fair to state this study does show a significant relationship, but why?

Comparisons of Studies

Phase One of this study was a partial replication of Finch's dissertation where he is the only one known to have used the Kirton Adaption-Innovation Inventory with school superintendents in empirical research. Finch (2013) focused on public school superintendents serving in suburban school districts around the Chicago metropolitan area. In his mixed method, two-phased study, he administered the KAI to 123 suburban Chicago area superintendents (50.4% response rate). In this study, 129 eastern Washington superintendents were asked to participate and 44 responded by taking the KAI (34.1% response rate).

In both studies, demographic data were requested and reported upon including age, gender, the number of superintendent positions served in, and how long each has served in their district. Some demographic information reported in this study was not included in Finch's study, including how many years the superintendent had served in their current district and how many total years had they worked in K-12 public education.

As expected in comparing the two studies, there are some similarities and some distinct differences. The superintendents in the Chicago study on average were slightly younger than eastern Washington superintendents. They ranged from 37 to 75 years old with an approximate average age of 52 ($M = 51.69$, $SD = 7.76$). The approximate average age for superintendents in this study was 56 and ranged from 36 to 85 ($M = 55.86$, $SD = 9.42$).

One of the most notable differences between the two studies is the contrast in gender representation. In Finch's study, which was made up largely of suburban superintendents, 80 were male (65%) and 43 were female (35%). Of the superintendents in this study, most serving in smaller rural communities, 38 were male (86%) and six were female (14%). In the eastern Washington region, there are 129 superintendents serving 136 districts. Of these, 21 are female (16%). In 2016-17, there were 78 female superintendents in the state of Washington representing 26% (H. Paroff, personal communication, March 31, 2017).

Another area reported on in both studies, was the number of superintendent positions in which superintendents had served. In Finch's study, 74.8% of superintendents were in their first job as a superintendent. His participants had served in from one to six positions ($M = 1.4050$, $SD = .88108$). In this study, 18 superintendents were in their first job (40.9%), seven were in their second (15.9%), three were in their third (6.8%), four were in their fourth (9%), and one was in his/her eighth (2.3%) ($M = 2.06$, $SD = 1.66$).

The number of years superintendents had served as a superintendent was also compared. In the Chicago study, years of service ranged from one to 35 years, with a mean of 6.46 and a standard deviation of 5.44. In this study, the years of service also ranged from one to 35. The mean was 10.18 and the standard deviation was 8.48.

While there are several distinct dissimilarities in demographics between the two studies, overall KAI scores and their subscale scores were surprisingly similar. Most of the quantifiable data and trends Finch found with suburban Chicago area superintendents were replicated with eastern Washington superintendents. In the Chicago study, scores on

the KAI ranged from a high adaptive score of 70 to a very highly innovative score of 153.

The mean was 101.33 and the standard deviation was 15.22, which is slightly more

innovative than the general population mean of 95. In this study, scores ranged from 58

to 140, with a mean KAI score of 101.59 and a standard deviation of 17.82 ($N = 44$).

Given the range of data for various occupations reported in the literature, these two

means are remarkably similar.

Also of interest were the number and percentage of superintendents in each of the

eight categories along the KAI continuum. Overall KAI scores ranged in the Chicago

study from 70 to 153. No scores fell into the Very Highly adaptive (32-49) or the Highly

Adaptive (50-64) categories. Six scores were Moderately Adaptive (65-79), while eight

were Highly Innovative (125-139) and two were in the Very Highly Innovative category

(140-160). As to be expected in a normal distribution, most scores were near the center.

Forty scores were Mildly Adaptive (80-95), 48 were Mildly Innovative (96-110), and 19

were Moderately Innovative (111-124). In this study of 44 completed instruments with a

range from 58 to 140, 17 KAI scores were in the adaptive category (38.6%) and 27 in the

innovative category (61.4%). In the adaptive category, one score was within the range of

Highly Adaptive (2%), four were Moderately Adaptive (9%), and 12 were Mildly

Adaptive (27%). No score was Very Highly Adaptive. Thirteen scores were Mildly

Innovative (30%), 10 were Moderately Innovative (23%), three were Highly Innovative

(7%), and one was Very Highly Innovative (2%). Like Finch's (2013) study, no Very

Highly Adaptive scores were observed. However, one Highly Adaptive score was present

in this study which was not present in the Chicago Study.

Of special note is how superintendents in both studies scored in the three factors of Sufficiency of Originality, Efficiency, and Rule/Group Conformity. Finch found, overall, the responding superintendents skewed toward the innovative side in sufficiency of originality by approximately +6 points (Finch, 2013, p. 112). Looking at the efficiency sub-scale, the entire sample skewed approximately three points to the adaptive side. This is also true for rule/group conformity as the sample skewed to the left (more adaptive) by four points. Findings in this study were consistent with Finch's. The mean for eastern Washington superintendents for SO was 47.20 (*SD*=9.54), for E was 18.52 (*SD*=5.34), and R was 36.00 (*SD*=8.03). For a mean of 101, the expected subscale scores are, 43 for SO, 20 for E, and 38 for R. For a mean of 102, the expected subscale scores are 44 for SO, 20 for E, and 38 for R. Much like Finch's findings, the SO mean for this superintendent sample was approximately 6.5 points more innovative than the general population SO expected mean. The superintendent subscale SO mean of 47.20 was 4.2 points more innovative than expected for an overall KAI score of 101, while the means of E (18.52) and R (36) were approximately 1.5 and 2 points more adaptive than expected.

From the KAI scores in the Chicago study, Finch concluded superintendents as a whole lean towards creating ideas (innovative), but also desire efficiency and "value, as a group, a greater cohesiveness and desire for consensus within an organization" (Finch, 2013, p. 113). Finch also noted that superintendents in his study appeared to be relatively balanced. This balance allowed them to act as "bridgers," a critical role identified by Kirton as those who can value and communicate with the extremes of the continuum (Kirton, 1976, 2000, 2003). In overall KAI and subscale scores, this study supports Finch's findings.

Both studies used correlational analysis examining relationships between KAI scores and various demographics. In the variables of age, gender, and experience level as a superintendent, no significance differences were found in Finch's study. From this, he concluded that the data supported A-I theory in that demographic factors such as age, gender, or experience level do not impact cognitive style. This study found the same results in various components of superintendent experience. However, this study did find a significant relationship between KAI scores and age.

Limitations of the Study

There are many limitations to this study including the population and sample, the instrument, and the multitude of variables related to the qualitative component including dependence upon participant's knowledge and understanding of KAI Theory and conflict, how interview questions were perceived, and procedures followed to collect the data.

This study looked at a relatively small sample of superintendents in eastern Washington State. Qualitative research by its nature is limited in generalizability. Due to the specific sample and the likelihood (and unlikelihood) of certain superintendents (and their board members) choosing to participate, the quantitative component of KAI scores is also limited. This needs to be considered even within the state of Washington, since the study focused on a region primarily made up of rural and small districts, as compared to the western portion of the state which has a much greater population and many more urban and suburban school districts. Along with this, participation was likely impacted in part by knowledge and/or a prior relationship with the researcher. Since the study dealt with conflict, a relatively sensitive area in superintendent-school board relationships, it is possible many superintendents chose not to participate, especially if they did not know or

have knowledge of the researcher. This assumption is somewhat supported by the much

higher return rate of participants within the ESD the researcher had served in prior as a

superintendent as compared to the other three ESDs involved in the study.

The Kirton Adaption-Innovation Inventory is a well-accepted and used inventory

in social science research. Since 1976, it has been used in over 300 sanctioned studies in

multiple disciplines and fields including business, health sciences, higher education, and

the military (Kirton, 2013). The KAI has strong support for validity and reliability and is

relatively easy to complete on-line (Kirton, 2000, 2003). Computerized scoring is

consistent and all administrators of the KAI are required to complete a week-long, in-

residence course for certification to fully understand A-I Theory, effectively administer

the KAI, and help participants interpret results. Even with these strengths, the KAI is

dependent upon the participant's understanding the questions and answering them

thoughtfully and honestly. This is true with any self-reporting psychometric instrument.

Possibly the two weakest areas of the study are 1) the dependence upon the

participants to read and comprehend the eight-page KAI Feedback document and acquire

an understanding of cognitive style, A-I Theory, and what their scores mean, and 2) the

participants' understanding and interpretation of conflict, even after being given an

operational definition within the interview. These are variables that are extremely hard to

control for and to assume and proclaim a high level of consistency would be misleading.

The qualitative data collection process itself, especially in conducting interviews

via e-mail or by phone call, also created vulnerabilities. As both superintendents and

board members are often very busy, the option to answer no to the interview question

concerning conflict and thus complete the interview via e-mail was logically tempting to save time and bring individual closure to the study.

However, given all these limitations, the study was still valuable in that it 1) added to the data base of superintendent and board member KAI scores for future research, 2) exposed A-I Theory and the KAI to school governance teams as a possible team building and conflict mitigation tool, and 3) identified some cases where cognitive style and more specifically, cognitive gap may have contributed to conflict on superintendent-school board teams.

Future Research

In the literature review for this study, five areas were focused upon. They were the superintendent-school board team, diversity on teams, cognitive style, intra-group conflict, and the Kirton Adaption Theory and Inventory. Each one separately and the integration of them all into helping school governance teams become better at their job are ripe areas for future research.

Given the importance of K-12 education to almost all aspects of our nation, be it the foundation of our democracy to the fuel for our economic engine, it is critical the superintendent-school board team functions at the most effective and efficient level. Considering this crucial role, especially as recent research has tied it to student achievement, it is surprising how relatively little research has been directed towards this school governance body (Alsbury, 2003, 2008a; Alsbury & Gore, 2015, Delagardelle, 2008; Hess & Meeks, 2010; Land, 2002). This may be one of the least focused on areas of empirical studies in K-12 education. Clearly, more research is needed relative to these

teams in all areas, from exploring the best governance models and managing resources to maximizing its role in impacting student learning.

The interrelationships on the superintendent-school board team is one of these areas that must be explored deeper. Conflict is one component of this. This study, even though it is an attempt in this area, only scratches the surface. However, even recognizing all its limitations, this effort has identified some conflict on superintendent-school board teams. These findings are in support of prior research in this area. The reasons for conflict on these teams and how best to mitigate it is almost open-ended. Much more needs to be learned and applied.

Diversity on teams, cognitive style, and intra-group conflict all transcend multiple fields and disciplines. Suggesting future research in these areas could take volumes, as there are almost infinite directions one could go. However, overlaying these areas and applying them to school governance teams narrows the scope and becomes more manageable. Given the importance of the superintendent-school board team in the leading and management of all aspects of the district and the impact it has on student learning, it is imperative it functions at the highest level. This should be the goal of every governance team. Research in each of the above areas can assist with this goal.

How does diversity, be it identity or functional, impact superintendent-school board teams? Does it enhance or hinder problem solving capacity? If so, under what conditions? More specifically, what is the role of cognitive diversity? Should it be recruited? How does one leverage it for positive effects? How does intra-group conflict impact superintendent-school board teams? If task conflict can impact in a positive manner, what are best practices to manage it? The above are just a few of the possible

research questions that can lead to future quantitative, qualitative, or mixed-method research. If the answers to them can enhance the functionality of a superintendent-school board team, all are worthy to pursue through empirical research.

But this study focused on using A-I Theory and knowledge of KAI scores in the context of superintendent-school board teams. As mentioned in the literature review, A-I Theory is well thought out and articulated. The KAI is a highly regarded instrument, with strong support for validity and reliability and has an impressive record of use in empirical studies. Cognitive gap has been shown to have a relationship with increased levels of conflict, especially when teams are pressurized under stress (Kirton 2000, 2003). What is missing is sophisticated experimental or even quasi-experimental research supporting causation of cognitive gap to conflict. In addition to this, a few fundamental questions remain unanswered. Does knowledge of A-I Theory and individual KAI scores enhance the effectiveness and efficiency of a team? If so, under what conditions? Closely related to this, is the teaching of theory and the knowledge of individual and team member scores an effective intervention for the mitigation of conflict? Can this intervention be proactive and prevent conflict?

Logically, most people who have some knowledge of A-I Theory would assume the answers to these questions are yes. Those of us trained and certified in A-I Theory also believe the answer to the questions above are yes and even have some knowledge for the conditions where the KAI may be most effective. There are many anecdotal stories practitioners have experienced and can share by having used the KAI in multiple fields. However, the problem is this information is primarily anecdotal. There are no empirical studies at this time beyond correlational to support these assumptions.

In the context of superintendent-school board teams, the answers to these questions are germane. There is a relationship between these teams and the smooth running of a school district. Specifically, high functioning teams that work well together and function at a high level can positively impact student achievement. But boards are often impacted negatively by conflict, which can take away from their effectiveness and efficiency. Adding diversity to the board, specifically cognitive diversity, can enhance the board's capacity to solve complex problems. However, this diversity can add to the probability conflict will exist unless the team is well-lead and managed. Anecdotal evidence supports that knowledge of A-I Theory and individual KAI scores can mitigate and possibly prevent conflict, thus helping leverage the diversity on the board and increase its capacity to solve complex problems. However, empirical studies are missing in support of this claim. The hope is this study, even in some small way, is used as a springboard for future research in attempting to answer these questions. Ultimately, identifying and validating leadership tools for school governance teams to function at a higher level is the goal.

Observations and Lessons Learned

Upon reflection on any completed study, there are things that went well and things that were challenging. This study was no different as there were many lessons learned from the process, both positive and negative. They are included here to assist future researchers.

Of the positive lessons learned, the most significant was the value of extensive thought and preparation that went into the technical side of collecting and analyzing data. Three major beta tests were done prior to the study to improve data collection processes

and data analysis. These tests were done with groups of up to 30 people in and out of

public education and proved instrumental in the smooth collection and analysis of the

data. Learning gleaned from these tests resulted in procedures being put in place prior to

the study to send e-mails, assign codes, manage data, and track status of participants.

The quality of the instrument, the ease of its use, and the type of feedback it

provided also proved to be critical. The on-line KAI was found to be relatively easy to

access and complete by the participant. The ability of the researcher to quickly evaluate

the scores and pass them on to participants within minutes after the KAI was submitted

was very helpful. The scores being embedded in an eight-page feedback document

explained A-I Theory well and allowed for smooth transition to the interview processes

of both Phases One and Two. Along with this, acquiring and managing participant

consent forms was also relatively easy to accomplish due to electronic signature software.

The greatest challenge in this study was recruiting participation, both for the

quantitative and qualitative components. It was assumed superintendents would be more

receptive to complete the KAI and be part of this study, especially if the request was

coming from a prior superintendent who had worked in the region and their KAI results

would be interesting and valuable to them. This was a false assumption. Superintendents

are busy people. As school administrators, they are often requested to be part of studies

that can require time out of a busy day. The 34% participation rate by superintendents in

the first stage of Phase One was lower than desired or expected. However, even this rate

was after a great deal of work including up to three reminder letters (Appendix F, G, &

H) over a 15-day period.

The second stage of Phase One was originally intended to interview superintendents either by phone or in-person. It was quickly realized setting up times to communicate was elusive and that data collection would quickly come to halt unless something changed. A decision was made to offer the option of answering the questions via e-mail if the superintendent did not perceive any conflict on his/her team and/or e-mail was their preferred way to communicate. This greatly enhanced data collection and allowed the researcher to spend more time talking directly with participants who had reported conflict. Even with this change, 11 original participating superintendents did not complete the interview either via e-mail or phone.

Once four superintendent-school board teams were identified for Phase Two, greater challenges were experienced in soliciting board participation. This occurred even with the full support and encouragement of their superintendent. Nineteen board members were invited to participate in Phase Two of this study. An introduction e-mail was sent out to all and a second e-mail was sent with directions, link, and individual access code to take the KAI. For those who did not respond within 48 hours, a reminder e-mail was sent. The collection window for board members to take the KAI was one week. This period was established after their superintendent asked for and gained permission for their team to participate in the study. As the individual KAI score was a prerequisite to the interview, only those board members who completed the KAI were interviewed. They also were given the option to complete the interview via e-mail. Of the 19 board members requested to complete the KAI, eight did so. Of these, four completed interviews.

The possible reasons for the challenges around participation are many and without evidence, can only be speculated upon. However, two seem to come to the forefront. There is a good chance the title of the study was problematic and discouraged some to participate. "Cognitive Style and Conflict on Superintendent-School Board Teams" did accurately represent the purpose of the study. However, the term "conflict" could be perceived by some as negative, and be a detriment to participation. It is possible both superintendents and board members did not want to be associated with "conflict," even if they recognized not all conflict is negative. Possibly a better title would have been, "The Impact of Cognitive Style on Superintendent-School Board Teams."

Along with the title, the actual focus of the study may be too threatening. Relationships on superintendent-school board teams can be sensitive. On any given team, there could be conflict between the superintendent and one or more board members or between board members themselves. As the primary purpose of the study was to investigate conflict and attempt to assess if cognitive style could be a contributor, it is highly likely those in conflict chose not to participate. For them, the risk of establishing or increasing strained relationships may not be worth the possible gains they might experience from the study.

A more minor challenge, but still one that should be noted, is the possible barrier to communication and data collection by the researcher using a g-mail account. It is unknown how many, if any of the e-mails sent soliciting participation may have ended up in trash or spam folders, depending upon the filters in place.

Ultimately, it may be fair to speculate all the challenges articulated above are related in some way to the level of trust that existed between the researcher and the

prospective participant. In most cases, no trust existed as the superintendent and especially the board members did not know or had an established relationship with the researcher. In a study of this nature, especially given the sensitivity of conflict on teams, trust is difficult to establish. A significant effort was made to be transparent and establish trust via written correspondence. Even with the best drafted introductory letters, the overall efficacy of the study is still dependent upon potential participants choosing to engage. To ultimately probe Research Question One, possibly other forms of qualitative study methods should be employed in the future where some level of trust is established first, then the identification and analysis of conflict is pursued.

Conclusion

This study was based upon research from many disciplines and fields. It was synthesized and applied to K-12 public education, specifically in the context of superintendent-school board teams. Because of this broad base, the results and insights gained have potential applications both in and out of education. Even though it may only be an addition of a small slice to the literature, insight can be gained for future research by not only the results, but also the lessons learned about the processes used, both from the successes and the challenges.

Regardless of this study's flaws and limitations, some key ideas prevail. First, superintendent-school board teams matter. It is critical they work together in collaboration for the benefit of the children, staff, and community they serve. Second, there are findings in this study that indicate some of these teams had or are experiencing conflict. It is not clear how many, but it is safe to state conflict does exist. Any conflict, if it is not contributing to the effectiveness and efficiency of the team, can have a negative

impact on its capacity to do its work. Third, cognitive style, although not connected quantitatively in this study, may be a contributor to their conflict in the opinion of some superintendents and board members. This especially seems prevalent concerning participants with extreme KAI scores. This knowledge can be helpful if kept in perspective and used accordingly.

For experienced educators who have been involved with K-12 education for a while, it is widely accepted there are no panaceas to the complex problems they face daily. However, for those who fill their tool box with the appropriate diagnostic and intervention tools, along with the wisdom and knowledge on when and how to best to use them, they increase their probability of success. Knowledge of A-I Theory, one's own tendencies as indicated by their KAI score, and the knowledge of others' tendencies who serve on the team, represent one of these tools. To say A-I Theory and the KAI are anything more, could be misleading. To not recognize the possibility cognitive style can contribute to conflict and not have the tools to effectively manage and leverage the diversity on a team, could sub-optimize the team's potential. This study attempted to introduce this tool. For most participants, they had never heard of it. For almost all, it had great face validity and was interesting. For many, they found it useful. For some, they have embraced it and desire to add it to their tool box. For all its flaws and weaknesses, if this study has added to the tool boxes of some practitioners even in a small way, this researcher deems it a success.

References

Alsbury, T. L. (2003). Superintendent and school board member turnover: Political versus apolitical turnover as a critical variable in the application of the dissatisfaction theory. *Educational Administration Quarterly*, *39*(5), 667-698.

Alsbury, T. L. (Ed.) (2008a). *The future of school board governance: Relevancy and revelation.* Lanham, MD: Rowman & Littlefield.

Alsbury, T. L. (2008b). School board member and superintendent turnover and the influence on student achievement: An application of dissatisfaction theory. *Leadership and Policy in Schools*, *7*, 202-229.

Alsbury, T. L., & Gore, P. (Eds.) (2015). *Improving school board effectiveness: A balanced governance approach.* Cambridge, MA: Harvard Education.

Allison, C. W., & Hayes, J. (1996). The cognitive style index: A measure of intuition analysis for organizational research. *Journal of Management Studies, 33*, 119-135. http://dx.doi.org//10.1111/j.1467-6486.1996.tb00801.x

Amason, A. (1996). Distinguishing effects of functional and dysfunctional conflict on strategic decision making: Resolving a paradox for top management teams. *Academy of Management Journal*, *39*, 123-148.

Armstrong, S. J., Cools, E., & Sadler-Smith (2011). Role of cognitive styles in business and management: Reviewing 40 years of research. *International Journal of management Reviews, 14*(3). http://dx.doi.org/10.1111/j.1468-2370.2011.00315.x

Bagozzi, R. P., & Foxall, G. R. (1995). Construct validity and generalizability of the Kirton Adaption-Innovation inventory. *European Journal of Personality, 9*, 185-206. http://dx.doi.org/10.1002/per.2410090303

Beene, J. M., & Zelhart, P. F (1988). Factor analysis of the Kirton Adaption-Innovation Inventory. *Perceptual and Motor Skills, 66*, 667-671. http://dx.doi.org/10.2466/pms.1988.66.2.667

Blasko, J. J. (2016). *Superintendent and school board attitude and beliefs alignment and its relationship to student achievement* (Unpublished doctoral dissertation). Seattle Pacific University, WA.

Brown, R. (2001). Kirton Adaption-Innovation Inventory (1998 edition). In B. S. Plake, & J. C. Impara (Eds.), *The fourteenth mental measurements yearbook.* Accession number: Test 1935. Lincoln, NE: University of Nebraska Press.

Clapp, R. G. (1993). Stability of cognitive style in adults and some implications: A longitudinal study of the Kirton Adaption-Innovation inventory. *Psychological Reports, 73*, 1235-1245. http://dx.doi.org/10.2466/pr0.1993.73.3f.1235

Clapp, R. G., & De Ciantis, S. M. (1989). Adaptors and innovators in large organizations: Does cognitive style characterize actual behavior of employees at work? An exploratory study. *Psychological Reports, 65*, 503-513. http://dx.doi.org/10.2466/pr0.1989.65.2.503

Creswell, J. W. (2013). *Qualitative inquiry and research design.* Los Angeles, CA: Sage.

Creswell, J. W., & Plano Clark, V. L. (2006). *Designing and conducting mixed methods research.* Los Angeles, CA: Sage.

Danis, W., & Dollinger (1998). A provisional comparison of factor structures using English, Japanese, and Chinese versions of the Kirton Adaption-Innovation Inventory. *Psychological Reports, 83*, 1095-1103. http://dx.doi.org/10.2466/pr0.1998.83.3.1095

De Dreu, K. W., & Gelfand, M. J. (Eds.) (2008). *The psychology of conflict and conflict management in organizations.* New York, NY: Taylor and Francis Group.

Delagardelle, M. (2008). The lighthouse inquiry: Examining the role of school board leadership in the improvement of student achievement. In T. L. Alsbury & P. Gore (Eds.), *The future of school board governance: Relevancy and revelation* (pp. 191-223). Latham, MD: Rowman & Littlefield.

Ee, J., Seng, T. O., & Kwang, N. A. (2007). Styles of creativity: Adaptors and innovators in a Singapore context. *Asia Pacific Education Review, 8*(3) 364-373. http://dx.doi.org/10.1007/BF03026466

Finch, C. L. (2013). *The rebel leader: A sequential explanatory mixed method analysis of rebel superintendents in suburban public schools* (Doctoral dissertation). Available from Pro Quest. (UMI 3565993).

Foxall, G. R., & Hackett, P. M. W. (1992). The factor structure and construct validity of the Kirton Adaption-Innovation inventory. *Personality and Individual Differences,13*, 967-975. http://dx.doi.org/10.1016/0191-8869(92)90130-H

Goldsmith, R. E. (1984). Personality characteristics associated with adaptation-innovation. *The Journal of Psychology, 117*, 159-165. http://dx.doi.org/10.1080/00223980.1984.9923672

Goldsmith, R. E., & Matherly, T. A. (1986a). The Kirton-Adaption inventory, faking, and social desirability: A replication and extension. *Psychological Reports, 58*, 269-270. http://dx.doi.org/10.2466/pr0.1986.58.1.269

Goldsmith, R. E., & Matherly T. A. (1986b). Seeking simpler solutions: Assimilators and explorers, adaptors and innovators. *Journal of Psychology, 120*(2) 149-155. http://dx.doi.org/10.1080/00223980.1986.9712624

Hammerschmidt, P. K. (1996). The Kirton Adaption Innovation inventory and group problem solving rates. *Journal of Creative Behavior, 30*(1), 61-74.http://dx.doi.org/10.1002/j.2162-6057.1996.tb00758.x

Hess, F. M., & Meeks, O. (2010). *School Boards Circa 2010: Governance in the Accountability Era.* Washington DC: Thomas B. Fordham Institute

Holmen, J. P. (2016). *School boards and student achievement: The relationship between previously identified school board characteristics and improved student learning* (Unpublished doctoral dissertation). Seattle Pacific University, WA.

Hong, L., & Page, S. E. (2004). Groups of diverse problem solvers can outperform groups of high-ability problem solvers. *Proceedings of the National Academy of Sciences of the United States, 101*(46), 16385-16389. http://dx.doi.org/10.1073/pnas.

Horowitz, S. K., & Horowitz, I. B (2007). The effects of team diversity on team outcomes: A meta-analytic review of team demography. *Journal of Management, 33(6),* 987-1015. http://dx.doi.org/10.1177/0149206307308587

Iowa Association of School Boards. (2000). *The Lighthouse Inquiry: School board/superintendent team behaviors in school districts with extreme differences in student achievement.* Des Moines, IA: Iowa Association of School Boards.

Isaksen, S. G., Babij, B. J., & Lauer, K. J. (2003). Cognitive styles in creative leadership practices: exploring the relationship between level and style. *Psychological Reports, 93*, 983-994. http://dx.doi.org/10.2466/pr0.2003.93.3.983

Isaksen, S. G., & Kaufmann, G. (1990). Adaptors and innovators: Different perceptions of the psychological climate for creativity. *Studia Psychologica, 32*, 129-141.

Jacobsen, C. M. (1993). Cognitive styles of creativity: Relations of scores on the Kirton Adaption-Innovation Inventory and the Myers-Briggs Type Indicator among managers in the USA. *Psychological Reports, 72*, 1131-1138. http://dx.doi.org/10.2466/pr0.1993.72.3c.1131

Jehn, K. A., Bezrukova, K., & Thatcher, S. (2008). Conflict, diversity and fault lines in workgroups. In C. K. W. De Dreu & M. J. Gelfand (Eds.), *The psychology of conflict and conflict management in organizations* (pp. 179-210). New York, NY: Taylor & Francis Group.

Jehn, K. A., & Mannix, E. A. (2001). A longitudinal study of intra-group conflict and group performance. *The Academy of Management Journal, 44*(2), 238-251.

Kirton, M. J. (1976). Adaptors and innovators: A description and measure. *Journal of Applied Psychology, 61*, 622-629. http://dx.doi.org/10.1037/0021-9010-.61.5.622

Kirton, M. J. (1978). Have adaptors and innovators equal levels of creativity? *Psychological Reports, 42*(3), 695-698. http://dx.doi.org/10.2466/pr0.1978.42.3.695

Kirton, M. J. (1980). The Kirton Adaption-Innovation Inventory: A reply to Mulligan and Martin. *Psychological Reports, 46*(3), 950. http://dx.doi.org/10.2466/pr0.1980.46.3.950

Kirton, M. J. (2000). *Adaptors and innovators: Styles of creativity and problem solving.* Hertfordshire, U.K.: KAI Distribution Centre.

Kirton, M. J. (2003). *Adaption-innovation: In the context of diversity and change.* New York, NY: Routledge.

Kirton, M. J. (2013). Kirton Adaption-Innovation Inventory manual. Newmarket, Suffolk, U.K: Occupational Research Centre.

Kirton, M. J., & McCarthy, R. M. (1985). Personal and group estimates of the Kirton inventory scores. *Psychological Reports, 57*, 1067-1070. http://dx.doi.org/10.2466/pr0.1985.57.3f.1067

Kirton, M. J., & Pender, S. (1982). The adaption-innovation continuum, occupational type, and course selection. *Psychological Reports, 51*(3), 883-886. http://dx.doi.org/10.2466/pr0.1982.51.3.883

Kowalski, T.J. (1995). *Keepers of the Flame: Contemporary Urban Superintendents.* Thousand Oaks, CA: Corwin Press

Land, D. (2002). Local school boards under review: Their role and effectiveness in relation to student's academic achievement. *Review of Educational Research, 72, 229-278.*

Lorentzen, I. J. (2013). *The relationship between school board governance behaviors and student achievement scores* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database. (UMI No. 3568115)

Mello, A. L., & Delise, L. A. (2015). Cognitive diversity to team outcomes: The roles of cohesion and conflict management. *Small Group Research, 46*(2), 204-226. http://dx.doi.org/10.1177/1046496415570916

Milliken, F. J., & Martins, L. L. (1996). Searching for the common threads: Understanding the multiple effects of diversity in organizational groups. *Academy of Management Review, 21,* 402-433. http://dx.doi.org/10.5465/AMR.1996.9605060217

Mountford, M. (2008). Historical and current tensions among board-superintendent teams: Symptoms or cause? In T. L. Alsbury (Ed.), *The future of school governance* (pp. 81-114). Lanham, MD: Rowman & Littlefield Education.

Murdock, M. C., Isaksen, S. G., & Lauer, K. J. (1993). Creativity training and the stability and internal consistency of the Kirton Adaption-Innovation Inventory. *Psychological Reports, 72*(3f), 1123-1130. http://dx.doi.org/10.2466?pr).1993.72.3c.1123

Mulligan, G., & Martin, W. (1980). Adaptors, innovators and the Kirton Adaption-Innovation Inventory. *Psychological Reports, 46*, 883-892. http://dx.doi.org/10.2466/pr0.1980.46.3.883

Petersen, G. J., & Fusarelli, L. D. (2001, November). *Changing relationships: An exploration of the relationship between superintendents and boards of education.* Paper presented at the Annual Conference of the University Council for Educational Administration, Cincinnati, OH.

Polzer, J. T., Milton, L. P., & Swann, W. B. (2002). Capitalizing on diversity: Interpersonal congruence in small groups. *Administrative Science Quarterly, 47*, 296-324. http://dx.doi.org/10.2307/3094807

Rickards, T., & Gaston, K. (1995). A re-examination of personal and group estimates of

    the Kirton Adaption-Innovation scores. *Psychological Reports, 77*(2), 491-498.

    http://dx.doi.org/10.2466/pr0.1995.77.2.491

Riley, M. (1993). Organization and creativity: A replication of the KAI test. *Journal of*

    Managerial Psychology, 8(6), i-iv.

Saatcioglu, A., Moore, S., Sargut, G., & Bajaj, A. (2011). The role of school board social

    capital in district governance: Effects on financial and academic outcomes.

    Leadership and Policy in Schools, 10, 1-42.

    http://dx.doi.org/10.1080/15700760903511780

Shelton, T. (2010). *The effects of school system superintendents, school boards and their*

    interactions on longitudinal measures of districts' students' mathematics

    achievement (Doctoral dissertation). Retrieved from ProQuest Dissertations and

    Theses database. (UMI No. 3451142)

Stake, R. E. (1995). *The art of case study research,* Thousand Oaks, CA: Sage.

Stum, J. (2009). Kirton's Adaption-Innovation Theory: Managing cognitive styles in

    times of diversity and change. *Emerging Leadership Journeys, 2*(1), 66-78.

Tullett, A. D. (1995). The adaptive-innovative (A-I) cognitive styles of male and female

    project managers: Some implications for the management of change. *Journal of*

    Occupational and Organizational Psychology, 68, 359-365.

    http://dx.doi.org/10.1111/j.2044-8325.1995.tb00593.xoi:

Van Deuren, A. E., Evert, T. F., & Lang, B. A. (2016). *Working toward success.* Lahman,

    MD: Rowman & Littlefield

van Knippenberg, D., & Schippers, M. C. (2007). Work group diversity. *Annual Review of Psychology, 58,* 515-541.

http://dx.doi.org/10.1146/annurev.psych.58.110405.085546

Vogt, W. P, & Johnson, R. B. (2011). *Dictionary of statistics and methodology: A nontechnical guide for the social sciences.* Thousand Oaks, CA: Sage.

Waters, J. T., & Marzano, R. (2006). *School district leadership that works: The effect of superintendent leadership on student achievement.* Denver, CO: McREL.

Witkin, H. A., Moore, C. A., Goodenough, D. R., & Cox, P. W. (1977). Field dependent and field independent cognitive styles and their educational implications. *Review of Educational Research, 47,* 1-47.

Witkin, H. A., Moore, C. A., Oltman, P. K., Goodenough, D. R., Friedman, F., Owen, D. R., & Raskin, E. (1977). Role of the field dependent and field independent cognitive styles in academic evolution: A longitudinal study. *Journal of Educational psychology, 69*(3), 197-211.

Williams K. Y., & O'Reilly C. A. (1998). Demography and diversity in organizations: a review of 40 years of research. *Research Organizational Behavior, 20*, 77–140.

Yin, R. K. (2009). *Case study research: Design and methods.* Thousand Oaks, CA: Sage.

Appendix A
Characteristics of Adapters and Innovators

Adapter	**Innovator**
Characterized by precision, reliability, efficiency, methodicalness, prudence, discipline, conformity.	Seen as undisciplined, thinking, tangentially approaching tasks from unsuspected angles.
Concerned with resolving residual problems, thrown up by the current paradigm.	Could be said to search for problems and alternative avenues of solution, cutting across current paradigms.
Seeks solutions to problems in tried and understood ways.	Queries problems concomitant assumptions: manipulates problems.
Reduces problems by improvement and greater efficiency, with maximum of continuity and stability.	Is catalyst to settled groups, irreverent of their consensual views; seen as abrasive, creating dissonance.
Seen as sound, conforming, safe, and dependable.	Seen as unsound, impractical; often shocks his opposite.
Liable to make goals of means.	In pursuit of goals treats accepted means with little regard.
Seems impervious to boredom, seems able to maintain high accuracy in long spells of detailed work.	Capable of detailed routine (system maintenance) work for only short bursts.
Is an authority within given structures.	Tends to take control in unstructured situations.
Challenges rules rarely, cautiously, when assured of strong support.	Often challenges rules, has little respect for past custom.
Tends to high self-doubt. Reacts to criticism by closer outward conformity. Vulnerable to social pressure and authority; compliant.	Appears to have low self-doubt, not needing consensus to maintain certitude in face of opposition.
Is essential to the functioning of the institution all the time, but occasionally needs to be "dug out" of the system.	In the institution is ideal in unscheduled crises, or better still in helping avoid them, if he can be controlled.

Appendix B
Phase One Superintendent Interview Questions

Thank you for your willingness to be part of this study. The following questions are designed to look at possible relationships between KAI scores and past or current conflict on superintendent/school board teams. Please be advised your answers will not be associated with you or your school district in any way.

Name:

School District:

1) How many years have you served as the superintendent in your current district?

2) How many total years have you served as a superintendent?

3) How many superintendent positions have you had?

4) How many total years have you served in education in a certificated position (administrator, teacher, counselor, etc.)?

5) Have you read the Kirton Adaption-Innovation Inventory Feedback Document sent to you after you submitted your KAI? If so, do you have any questions?

On page 4 of the feedback document, the characteristics of adaptors and innovators are listed.

6) Given this list and your own KAI score of xxx, do you feel your score accurately represents you?

For this study, conflict is defined as: **A process that begins when an individual or group perceives differences and opposition between itself and another individual or group about interests and resources, beliefs, values or practices that matter to them.**

Please note: In accordance with the definition above, the existence of conflict on a superintendent-school board team should not always be perceived as negative. Some conflict can contribute to enhanced problem solving and other positive interactions.

7) Given this definition, have you ever experienced any conflict with a current or past board member?

If no, this questionnaire is complete. Thank you.

8) If yes, please describe the conflict(s)?

9) In your opinion, do you think cognitive style may have contributed to the conflict(s). If so, why do you think so?

If no, this questionnaire is complete.

If yes, the following question will be asked:
Phase-two of this study will include one or more case studies of superintendent-school board conflict where cognitive style may be a contributor. In this phase, board members will be asked to take the KAI and some may be asked to participate in an (in-person or phone) interview. If selected, would you and your board be willing to participate in the second phase of this study?

This questionnaire is complete. Thank you for your time.

Appendix C
Initial Superintendent Letter Prior to Study

Dear (Superintendent's Name),

My name is Doug Asbjornsen and I have served as a teacher, principal, and superintendent in five different districts throughout our state. My last role in public education was Superintendent of the Reardan-Edwall School District near Spokane. I am currently serving as the Director of the Northeast Washington Educational Leadership Consortium (NEWELC). In this role, I oversee the Principal ProCert program representing ESD 101, Eastern, Gonzaga, Washington State, and Whitworth Universities.

I am currently conducting research for my doctoral dissertation at Seattle Pacific University, which explores cognitive style and conflict on superintendent-school board teams. The instrument I will be using is the Kirton Adaption-Innovation Inventory (KAI) which measures one's cognitive style. Cognitive style in my study is defined as the "preferred style with which an individual undertakes problem-solving." The KAI takes approximately 5-10 minutes to complete on-line and your score can be returned to you immediately via e-mail. All scores are considered confidential. After you have received your score, I will be follow-up with a short questionnaire (5-15 minutes) either by phone or in-person.

Later today, I will be sending you an e-mail requesting you be a participant in my research. As I have served as a school administrator for 21 years, I know you are exceptionally busy and frequently requested to participate in studies. Having "been there," I value your time and desire to make your participation beneficial to you.

When you receive my e-mail, I ask that you take the time to read it and consider participating. As a practitioner, I have found the KAI to be valuable tool in my own leadership development and working with teams both inside and outside of education.

Thank you,

Doug Asbjornsen
509-389-4410
dasbjornsen@gmail.com

Appendix D
Superintendent Study Invitation Letter and KAI Consent Form

Dear (Superintendent's Name),

The purpose of this letter is to invite you to participate in a study I am conducting as part of my doctoral program at Seattle Pacific University (SPU). My name is Doug Asbjornsen and I am the prior superintendent of the Reardan-Edwall School District west of Spokane. I left Reardan-Edwall when I was recalled to active duty with the Navy for some specialized work in 2010. After retiring from the Navy three years ago, I returned to SPU to complete my doctoral program where I had originally earned my superintendent's certification in 2003.

Description of the Research

My dissertation is entitled, "Cognitive Style and Conflict on Superintendent-School Board Teams." It is a two-phased mixed method study, using an explanatory participation selection model. The Kirton Adaption-Innovation Inventory (KAI) will be used for Phase One (the quantitative component) while case study methodology will be used for Phase Two. For this study, the population I will be working with is public school superintendents and selected school board members in eastern Washington who are supported by ESDs 101, 105, 123, and 171.

The KAI is based upon the Kirton Adaption-Innovation Theory (A-I Theory) relating to cognitive style or your preferred method of problem solving. A-I Theory and the KAI were first introduced in 1976 and have been used in nearly 400 published research studies in business, higher education, and the military. Only one study to date has used the KAI relating to K-12 school governance (The Rebel Superintendent, Christopher Finch, 2013, Loyola).

You have been invited to participate because you are a current superintendent in a school district served by one of the ESD's listed above. This study will include public school superintendents and selected school board members in eastern Washington State between the ages of 21 and 99.

The research is sanctioned by **Seattle Pacific University**, 3307 3rd Ave West, Seattle WA. It will take place on-line and by phone or personal interview at a location convenient to you. Data collection and analysis will take place in my home office located in Spokane, WA.

What will my participation involve?

As a potential participant, you will be asked to take the KAI which takes five to ten minutes to complete. After submitting your inventory, it is immediately scored in a server in England and sent back to me where I review it either on my computer or smart phone. If I am by either device when you submit your KAI, I can have your score back to you in

minutes. By completing the KAI on-line, you will receive your KAI score via e-mail embedded in an eight-page feedback document that explains A-I Theory and how to interpret your score. I will then follow-up to conduct a short interview with you via phone call or personal visit at your convenience. To honor your time, the interview questions will be sent to you via e-mail in advance for your preparation.

One to five superintendent-school board teams will be invited to participate in Phase Two of this study. In Phase Two, current school board members will be asked to take the KAI and participate in the follow-up interview. Phase Two superintendent interviews could take up to 60 minutes to complete and may be tape-recorded with your permission.

It is anticipated this study will take place in March and April, 2017, with most the data collected in March, with possible follow-interviews in early April. Your participation will last for no more than the two months listed above. You may withdraw from the study at any time.

As the principal investigator, I will be the only one collecting data. All KAI scores are confidential and will not be shared with anyone without each participant's permission. By voluntarily being part of this study and completing the KAI, you are under no obligation to continue with this study by participating in the follow-up interview or if asked to participate in Phase Two. You also can choose to skip any questions in the KAI or interview(s). If asked and you choose to participate in the second phase, no school board member(s) will be contacted without your knowledge and permission.

Are there any risks to me?

As a prior superintendent, I am extremely sensitive to superintendent-school board relationships. The importance and critical nature of these is well understood and appreciated. I know these relationships at times can be sensitive and uncomfortable, especially in identifying and reporting upon conflict within the governance team.

This study is designed to be "minimal risk." All KAI scores and information gathered from interviews are considered confidential and will not be shared with others without the participant's consent. All effort will be made to mitigate any threat to the superintendent-school board team, including the use of protocols to ensure individuals and school districts cannot be identified. Data being reported in this study will not be reported if it is anticipated it could bring harm to one or more individuals on your team.

Seattle Pacific University and associated researchers do not offer to reimburse participants for medical claims or other compensation. If physical injury is suffered in the course of research, or for more information, please notify me, Doug Asbjornsen at 509-389-4410.

Are there any benefits to me?

By completing the KAI on-line, you will receive your scores electronically embedded in an eight-page feedback document explaining the Kirton Adaption-Innovation Theory and information on how to interpret your scores.

The KAI costs me approximately $8.00 per survey to administer. Of course, there is no charge to you if you chose to participate in this study. If selected and invited to participate in Phase Two (approximately 10% of participants), your board members will be given the opportunity to take the KAI also at no charge. I will also provide a complimentary in-service to you and your board at a time and place conducive to you and your governance team's schedule after the collection of my data is complete. This in-service goes into more depth on A-I Theory and how to interpret your scores and leverage the diversity on your team.

How will my confidentiality be protected?

While there will probably be publications as a result of this study, your name will not be used nor will you be identified in any way. The information in the study records will be kept confidential. Data will be stored securely and will be made available only to persons conducting the study unless you specifically give permission in writing to do otherwise. No reference will be made in oral or written reports that could link you to the study. Your de-identified data may be used in future research, presentations or for teaching purposes by the Principal Investigator listed above.

Whom should I contact if I have questions?

This study has been approved by the Seattle Pacific University Institutional Review Board (IRB). Information about the rights of human subjects in SPU approved research can be obtained by contacting the SPU IRB office. If you have questions about your rights as a research subject you should contact the Seattle Pacific University Institutional Review Board Chair at 206-281-2201 or IRB@spu.edu.

If you have questions about the research at any time, please contact me. As the Principal Investigator (PI), my contact information is listed below.

Your participation is completely voluntary. If you begin participation and change your mind you may end your participation at any time without penalty.

Participation in the Study

As a prior school administrator for 21 years, I am convinced A-I Theory and the KAI can help superintendent-school board teams maximize their cognitive diversity, reduce conflict related to cognitive style, and more effectively and efficiently solve complex problems. I have given the KAI and a follow-up in-service to both the ESD 101 Board

and their Administrative Council. If you have any reservations concerning the KAI and/or this study, I invite you to contact Dr. Mike Dunn, ESD 101 Superintendent.

I encourage you to choose to participate in this study. I think you will find it both interesting and valuable. If you would like to participate, please read the information below which includes directions to take the KAI, a link to the on-line inventory, and your individual access code. If you have any questions or problems opening the letter or accessing the KAI, please contact me at 509-389-4410 or dasbjornsen@gmail.com.

****

Below is the link to complete the Kirton Adaption-Innovation inventory (KAI). Please note, this is not a test; NOT of how well you do, but what you PREFER to do.

As a measure of preferred style, this measure has NO right or wrong answers. The measure will give an indication of your preferred way of approaching the various situations that you may face day to day.

The KAI will take approximately 5-10 minutes to complete. I have learned by giving the KAI in the past, some people have questions on specific items. Below are typical responses for these questions:

1. **Do we need to complete the Respondent Details at the beginning of the inventory?**
   Yes, we need this information for our own recording purposes. Note that all responses on the KAI are considered confidential information and responses will not be shared.
2. **Should I answer these questions based on work-related interactions or family-related interactions?**
   You should consider all of your interactions over a long period of time, when working with different colleagues and family members.
3. **Question #6 – What does "prudent" mean?**
   Prudent means to be cautious or careful.
4. **Question #15 – What is a "plodder"?**
   A plodder is someone who is slow and steady.
5. **Question #23 – What does "proliferates" mean?**
   Proliferates means to have many at a rapid rate

By <u>clicking on the survey link below</u> you understand to your satisfaction the information regarding participation in this research project and agree to participate in this study.

To access the website, go to: <u>http://www.kaicentre.com/kaionline.htm</u>

Use the unique access code:
Superintendent: SUPXXXXXXX

Use the practitioner reference: dasbjornsen

Again, please contact me if you have difficulty accessing the site, your access code does not work, or you have additional questions on any aspect of this study.

Thank you for your participation.

Doug Asbjornsen
509-389-4410
dasbjornsen@gmail.com

Appendix E
Superintendent Follow-Up Letter

Dear (Superintendent's Name),

Thank you so much for completing the KAI and choosing to be part of my study. I know you are exceptionally busy. Again, I appreciate your time and participation.

By now, you should have received your scores via e-mail embedded in the KAI Feedback Document. Your overall score is listed on page 4 and your subscale scores are on page 7. Please let me know immediately if you have not received your feedback document as I will re-send it right away. I do encourage you to read this document, as it describes A-I Theory and how to interpret your scores. I want to emphasize, there is no value placed on your overall score. Being a high adapter (lower score) is not better than being a high innovator (higher score), or vice versa. People on both ends of the continuum as well as those in the middle play critical roles on teams. What is important is knowing your own tendencies and those of your team members.

In the second half of Phase One of this study, I would like to call you at your convenience and ask you the questions listed in the document entitled "Phase One Superintendent Interview Questions" (please see below). On the question sheet, if your answer to question seven is "no," I would anticipate the interview taking less than five minutes. The exception to this would be where you might have questions on the Kirton Adaption-Innovation Theory and/or the KAI. In that case, I am happy to take us much time as you desire. If your answer to question seven is yes, I would anticipate the interview taking 10-15 minutes. I am very sensitive to your schedule, so I will keep the interview to a minimum. For most participants, this interview will complete your/their involvement in this study.

After the data collection period (March 6-20), your data will be combined with the other participants' data and shared with you in a summarized format. You are one of 129 superintendents who have been invited to take the KAI.

I will get back with you in a couple of days to check if you are willing to participate in a follow-up interview. If so, I will send you an electronic consent form and we will set up a day and time over the next two weeks that would be convenient for me to call, including confirming a telephone number to use.

I do want to emphasize, even though you have taken the KAI, you can discontinue your involvement in this study at any time, including choosing not to be interviewed. Thank you again for completing the KAI, and if willing to continue, I look forward to speaking with you sometime soon.

Thank you,

Doug

dasbjornsen@gmail.com
509-389-4410

****

Phase One Superintendent Interview Questions

Thank you for your willingness to be part of this study. The following questions are designed to look at possible relationships between KAI scores and past or current conflict on superintendent/school board teams. Please be advised your answers will not be associated with you or your school district in any way.

Name:

School District:

In answering the following four questions, please include this current year:

1) How many years have you served as the superintendent in your current district?

2) How many total years have you served as a superintendent?

3) How many superintendent positions have you had?

4) How many total years have you served in education in a certificated position (administrator, teacher, counselor, etc.)?

5) Have you read the Kirton Adaption-Innovation Inventory Feedback Document sent to you after you submitted your KAI? If so, do you have any questions?

6) On page 4 of the feedback document, the characteristics of adaptors and innovators are listed. Given this list and your own KAI score, do you feel your score accurately represents you?

For this study, conflict is defined as: **A process that begins when an individual or group perceives differences and opposition between itself and another individual or group about interests and resources, beliefs, values or practices that matter to them.**

Please note: In accordance with the definition above, the existence of conflict on a superintendent-school board team should not always be perceived as negative. Some conflict can contribute to enhanced problem solving and other positive interactions.

7) Given this definition, have you ever experienced any conflict with a current or past board member?

If no, this questionnaire is complete. Thank you.

If yes, please describe the conflict(s)?

    8) In your opinion, do you think cognitive style may have contributed to the conflict(s). If so, why do you think so?

If no, this questionnaire is complete.

If yes, the following question will be asked:
Phase-two of this study will include one or more case studies of superintendent-school board conflict where cognitive style may be a contributor. In this phase, board members will be asked to take the KAI and some may be asked to participate in an (in-person or phone) interview. If selected, would you and your board be willing to participate in the second phase of this study?

This questionnaire is complete. Thank you for your time.

Appendix F
Superintendent Reminder Letter One

Dear (Superintendent's Name),

A few days ago, you should have received an invitation requesting your participation in my study, "Cognitive Style and Conflict on Superintendent-School Board Teams."

The Kirton Adaption-Innovation Inventory (KAI) is the primary instrument being used for the quantitative component. The KAI takes 5-10 minutes to complete, and if I am by my computer when you submit it, I can send you your results immediately. Within a few days after you receive your results, I will contact you to schedule a short, follow-up interview by e-mail or phone.

Having served as a school administrator for 21 years (principal at all three levels and as a superintendent), I remember well the various requests for research participation and how challenging it was to fit some of these in. Bottom line, they were often not my highest priority. Having been there, I "get this" and understand the demands and time constraints of your job.

Even though I know you are busy, I believe if you complete the KAI, you will find the theory and your individual scores both interesting and useful. I am convinced it can be "value added" in helping us understand ourselves as well as the people we serve in our leadership roles.

The KAI has strong validity and reliability and has been used in business, higher education and in the military for many years. For example, it is currently part of a five-year study at the United States Naval Academy designed to enhance creative thinking and problem solving skills.

I do encourage you to look back into your e-mail inbox (or trash or spam folders) and access the link and code to complete the KAI. If you cannot find it, I can re-send them to you.

If you complete the KAI and do not find value in it (or just do not wish to continue), you are welcome to drop out of the study at any time. Again, the follow-up interview, as well as all other components of this study, are voluntary.

For questions and/or concerns, please contact me at 509-389-4410 or dasbjornsen@gmail.com.

Thank you,

Doug

Appendix G
Superintendent Reminder Letter Two

Dear (Superintendent's Name),

Last week you should have received an invitation to take the Kirton Adaption-Innovation Inventory (KAI) as part of my study entitled, "Cognitive Style and Conflict on Superintendent-School Board Teams."

Even though I have met my initial goal for data collection, I will keep the KAI open until early next week for superintendents who would still like to participate. I truly think if you complete the KAI, you will find the results interesting and valuable. It is an instrument that has great potential for team building and to serve as a possible intervention tool for conflict.

Again, as I emphasized in my last e-mail, if you take the KAI and then no longer desire to continue with the follow-up interview, you can drop from the study at any time.

If you cannot find my original e-mail with the link and your personal access code, please let me know and I will re-send it to you.

Please contact me if you have any questions or concerns at 509-389-4410 or dasbjornsen@gmail.com

Thank you,

Doug

Appendix H
Superintendent Reminder Letter Three

Dear (Superintendent's Name),

If you were at NEWASA yesterday morning, you heard me encouraging you to complete the Kirton Adaption-Innovation Inventory (KAI) as part of my study entitled, "Cognitive Style and Conflict on Superintendent-School Board Teams."

Even though I have met my initial goal for data collection, I will keep the KAI open until early next week for superintendents who would still like to participate. I truly think if you complete the KAI, you will find the results interesting and valuable. It is an instrument that has great potential for team building and to serve as a possible intervention tool for conflict.

Again, as I emphasized in my last e-mail, if you take the KAI and then no longer desire to continue with the follow-up interview, you can drop from the study at any time.

If you cannot find my original e-mail with the link and your personal access code, please let me know and I will re-send it to you.

Please contact me if you have any questions or concerns at 509-389-4410 or dasbjornsen@gmail.com

Thanks,

Doug

Appendix I
School Director Interview Questions

Thank you for your willingness to be part of this study. The following questions are designed to look at possible relationships between KAI scores and past or current conflict on superintendent/school board teams. Please be advised your answers will not be associated with you or your school district in any way.

Name:

School District:

1) How many years have you served as a school director in your district?

2) How many superintendents have you had during your service as a school director?

3) Have you ever served as a school director in any other district?

4) Have you read the Kirton Adaption-Innovation Inventory Feedback Document sent to you after you submitted your KAI? If so, do you have any questions?

On page 4 of the feedback document, the characteristics of adaptors and innovators are listed.

5) Given this list and your own KAI score of xxx, do you feel your score accurately represents you?

For this study, conflict is defined as: **A process that begins when an individual or group perceives differences and opposition between itself and another individual or group about interests and resources, beliefs, values or practices that matter to them.**

Please note: In accordance with the definition above, the existence of conflict on a superintendent-school board team should not always be perceived as negative. Some conflict can contribute to enhanced problem solving and other positive interactions.

6) Given this definition, have you ever experienced any conflict with your current or past superintendent? If no, this questionnaire is complete. Thank you.

7) If yes, please describe the conflict(s)?

8) In your opinion, do you think cognitive style may have contributed to the conflict(s)?

If no, this questionnaire is complete. If yes, why do you think so?

This questionnaire is complete. Thank you again for your time.

Appendix J
School Director Study Invitation and KAI Consent Form

Dear (Board Director's Name),

Thank you so much for completing the KAI and choosing to be part of my study. I know you are exceptionally busy. Again, I appreciate your time and participation.

By now, you should have received your scores via e-mail embedded in the KAI Feedback Document. Your overall score is listed on page 4 and your subscale scores are on page 7. Please let me know immediately if you have not received your feedback document as I will re-send it right away. I do encourage you to read this document, as it describes A-I Theory and how to interpret your scores. I want to emphasize, there is no value placed on your overall score. Being a high adapter (lower score) is not better than being a high innovator (higher score), or vice versa. People on both ends of the continuum as well as those in the middle play critical roles on teams. What is important is knowing your own tendencies and those of your team members.

Please note, your KAI score is considered confidential. However, I do encourage you to share your score with your superintendent and other board members as it is valuable to know your cognitive style in relationship with other team members.

In the second half of Phase Two of this study, I would like to call you at your convenience and ask you the questions listed in the document entitled "Phase Two School Board Member Questions" (please see below). On the question sheet, if your answer to question six is "no," I would anticipate the interview taking less than five minutes. The exception to this would be where you might have questions on the Kirton Adaption-Innovation Theory and/or the KAI. In that case, I am happy to take us much time as you desire. If your answer to question eight is yes, I would anticipate the interview taking 10-15 minutes. I am very sensitive to your schedule, so I will keep the interview to a minimum. For most participants, this interview will complete your/their involvement in this study.

After the data collection period, your data will be combined with the other participants' data and shared with you in a summarized format. As of this writing, 44 eastern Washington superintendents have taken the KAI and 19 board members representing four school districts have been invited to complete it this week.

I will get back with you in the next 24 hours to check if you are willing to participate in a follow-up interview. If so, I will send you an electronic consent form and we will set up a day and time this week that is convenient for you, including confirming a telephone number to use. If you prefer not communicating with me by phone, you are welcome to answer my questions in written format and send them back to me via e-mail.

I do want to emphasize, even though you have taken the KAI, you can discontinue your involvement in this study at any time, including choosing not to be interviewed. Thank

you again for completing the KAI, and if willing to continue, I look forward to speaking with you sometime soon.

Thank you,

Doug
dasbjornsen@gmail.com
509-389-4410

■■

Phase Two School Board Member Questions

Thank you for your willingness to be part of this study. The following questions are designed to look at possible relationships between KAI scores and past or current conflict on superintendent/school board teams. Please be advised your answers will not be associated with you or your school district in any way.

Name:

School District:

1) How many years have you served as a school director in your district (including this year)?

2) How many superintendents have you had during your service as a school director (including your current superintendent)?

3) Have you ever served as a school director in any other district? If yes, how many other districts and for how many years?

4) Have you read the Kirton Adaption-Innovation Inventory Feedback Document sent to you after you submitted your KAI? If so, do you have any questions?

On page 4 of the feedback document, the characteristics of adaptors and innovators are listed.

5) Given this list and your own KAI score, do you feel your score accurately represents you?

For this study, conflict is defined as: **A process that begins when an individual or group perceives differences and opposition between itself and another individual or group about interests and resources, beliefs, values or practices that matter to them.**

Please note: In accordance with the definition above, the existence of conflict on a superintendent-school board team should not always be perceived as negative. Some conflict can contribute to enhanced problem solving and other positive interactions.

6) Given this definition, have you ever experienced any conflict with your current or past superintendent?

If no, this questionnaire is complete. Thank you.

7) If yes, please describe the conflict(s)?

8) In your opinion, do you think cognitive style may have contributed to the conflict(s)?

If no, this questionnaire is complete. Thank you.

9) If yes, why do you think so?

This questionnaire is complete. Thank you again for your time.

Appendix K
School Director Follow-Up Letter

Dear (Board Director's Name),

Thank you so much for completing the KAI and choosing to be part of my study. I know you are exceptionally busy. Again, I appreciate your time and participation.

By now, you should have received your scores via e-mail embedded in the KAI Feedback Document. Your overall score is listed on page 4 and your subscale scores are on page 7. Please let me know immediately if you have not received your feedback document as I will re-send it right away. I do encourage you to read this document, as it describes A-I Theory and how to interpret your scores. I want to emphasize, there is no value placed on your overall score. Being a high adapter (lower score) is not better than being a high innovator (higher score), or vice versa. People on both ends of the continuum as well as those in the middle play critical roles on teams. What is important is knowing your own tendencies and those of your team members.

Please note, your KAI score is considered confidential. However, I do encourage you to share your score with your superintendent and other board members as it is valuable to know your cognitive style in relationship with other team members.

In the second half of Phase Two of this study, I would like to call you at your convenience and ask you the questions listed in the document entitled "Phase Two School Board Member Questions" (please see below). On the question sheet, if your answer to question six is "no," I would anticipate the interview taking less than five minutes. The exception to this would be where you might have questions on the Kirton Adaption-Innovation Theory and/or the KAI. In that case, I am happy to take us much time as you desire. If your answer to question eight is yes, I would anticipate the interview taking 10-15 minutes. I am very sensitive to your schedule, so I will keep the interview to a minimum. For most participants, this interview will complete your/their involvement in this study.

After the data collection period, your data will be combined with the other participants' data and shared with you in a summarized format. As of this writing, 44 eastern Washington superintendents have taken the KAI and 19 board members representing four school districts have been invited to complete it this week.

I will get back with you in the next 24 hours to check if you are willing to participate in a follow-up interview. If so, I will send you an electronic consent form and we will set up a day and time this week that is convenient for you, including confirming a telephone number to use. If you prefer not communicating with me by phone, you are welcome to answer my questions in written format and send them back to me via e-mail.

I do want to emphasize, even though you have taken the KAI, you can discontinue your involvement in this study at any time, including choosing not to be interviewed. Thank you again for completing the KAI, and if willing to continue, I look forward to speaking with you sometime soon.

Thank you,

Doug
dasbjornsen@gmail.com   509-389-4410

Phase Two School Board Member Interview Questions

Thank you for your willingness to be part of this study. The following questions are designed to look at possible relationships between KAI scores and past or current conflict on superintendent/school board teams. Please be advised your answers will not be associated with you or your school district in any way.

Name:

School District:

1) How many years have you served as a school director in your district (including this year)?

2) How many superintendents have you had during your service as a school director (including your current superintendent)?

3) Have you ever served as a school director in any other district? If yes, how many other districts and for how many years?

4) Have you read the Kirton Adaption-Innovation Inventory Feedback Document sent to you after you submitted your KAI? If so, do you have any questions?

On page 4 of the feedback document, the characteristics of adaptors and innovators are listed.

5) Given this list and your own KAI score, do you feel your score accurately represents you?

For this study, conflict is defined as: **A process that begins when an individual or group perceives differences and opposition between itself and another individual or group about interests and resources, beliefs, values or practices that matter to them.**

Please note: In accordance with the definition above, the existence of conflict on a superintendent-school board team should not always be perceived as negative. Some conflict can contribute to enhanced problem solving and other positive interactions.

6) Given this definition, have you ever experienced any conflict with your current or past superintendent?

If no, this questionnaire is complete. Thank you.

7) If yes, please describe the conflict(s)?

8) In your opinion, do you think cognitive style may have contributed to the conflict(s)?

If no, this questionnaire is complete. Thank you.

9) If yes, why do you think so?

This questionnaire is complete. Thank you again for your time.

Appendix L
School Director Reminder Letter

Dear (School Director's Name),

The purpose of this e-mail is to encourage you to participate in my study and complete the Kirton Adaption-Innovation Inventory. If you do, I think you will find the information and your scores interesting and valuable.

As of this time, your superintendent has completed it as well as one of your other board members.

I have offered to your superintendent-school board team an in-service sometime this summer or early fall to go over the Kirton Adaption-Innovation Theory (A-I Theory) and your individual scores (if you desire). This is to express my appreciation for your team's participation and of course is at no cost to you or your district.

If you are going to participate, I ask you to complete the KAI today or tomorrow as I am trying to meet a data collection deadline of April 1. The KAI only takes 5-10 minutes to complete and if I am by my computer when you submit it, I can get your results back to you in minutes.

If you have any questions or concerns, please contact (superintendent name), as (he or she) is very familiar with my research. If you cannot find my original e-mail with the link to the KAI and your personal access code, I am happy to send it to you again.

I do hope you participate in this study. This research is designed to ultimately help superintendent-school board teams function more efficiently and effectively as they navigate the complexities of K-12 governance.

Thanks,

Doug

Engaging the culture, changing the world®

Seattle Pacific
U N I V E R S I T Y

INFORMED CONSENT: SUPERINTENDENT
Title of the Study: Cognitive Style and Conflict on Superintendent-School Board Teams

Principal Investigator (PI): Doug Asbjornsen, dasbjornsen@gmail.com, 509-389-4410

DESCRIPTION OF THE RESEARCH

The purpose of this mixed-method study is to identify possible cases of conflict on superintendent-school board teams where cognitive style, as defined by the Kirton Adaption-Innovation Theory (A-I Theory), may be a contributor. An explanatory participation selection model using the Kirton Adaption-Innovation Inventory (KAI) and personal interviews will assist in identifying possible cases to investigate. If found, this study will document these cases as examples where the knowledge of A-I Theory and individual KAI scores may help explain the source of the conflict and possibly lead to another tool that can be used for mitigation.

You have been invited to participate because you are a current superintendent in a school district served by ESD 101, 105, 123, or 171.

This study will include public school superintendents and selected school board members in eastern Washington State between the ages of 21 and 99.

The research will take place in/at **Seattle Pacific University**, 3307 3rd Ave West, Seattle WA and by phone or in-person in/at a location convenient to you. Data collection and analysis will take place in the office of the PI located at 2707 W. Courtland Ave, Spokane WA.

WHAT WILL MY PARTICIPATION INVOLVE?

If you decide to participate in this research you will be asked to take the Kirton Adaption-Innovation Inventory (KAI) on-line at your personal and/or district computer. This normally takes 5-10 minutes to complete. You will then be asked to participate in an interview by phone or personal visit by the PI at a time and location convenient to you. It is anticipated most interviews will take approximately 15-20 minutes to complete. One to five superintendent-school board teams will be invited to participate in Phase Two of this study. In Phase Two, current school board members will be asked to take the KAI and participate in the follow-up interview. Phase Two superintendent interviews could take up to 60 minutes to complete and may be tape-recorded with your permission.

It is anticipated this study will take place in March and April, 2017, with most the data collected in March, with possible follow-interviews in early April. Your participation will last for no more than the two months listed above. You may withdraw from the study at any time.

ARE THERE ANY RISKS TO ME?

This study is designed to be "minimal risk" in that all KAI scores and information gathered from interviews are considered confidential and are not shared with others without the participant's consent. The importance and critical nature of the superintendent and school board member relationship is well understood and appreciated. It is also known these relationships at times can be sensitive and uncomfortable, especially in identifying and reporting upon conflict within the governance team. All effort will be made to mitigate these threats, including the exclusion of data being reported in this study if anticipated it would bring any harm to one or more individuals on the superintendent-school board team.

Seattle Pacific University and associated researchers do not offer to reimburse participants for medical claims or other compensation. If physical injury is suffered in the course of research, or for more information, please notify the investigator in charge, Doug Asbjornsen at 509-389-4410.

ARE THERE ANY BENEFITS TO ME?

By completing the KAI on-line, you will receive your scores electronically embedded in an eight-page feedback document explaining the Kirton Adaption-Innovation Theory and information on how to interpret your scores. The approximate cost to the PI is $8.00 per inventory. As a participant, there is no cost to you. If selected and you agree to participate in Phase Two of this study, your current school board members will be offered the opportunity to complete the KAI, also at no charge. After all data collection is complete (KAI and all interviews), you will be offered an in-service for your superintendent-school board team where A-I Theory is explored more in-depth and the practical application of KAI scores is discussed. This in-service will be provided by the PI in your district and at a time mutually agreed upon at no charge.

HOW WILL MY CONFIDENTIALITY BE PROTECTED?

While there will probably be publications as a result of this study, your name will not be used nor will you be identified in any way. The information in the study records will be kept confidential. Data will be stored securely and will be made available only to persons conducting the study unless you specifically give permission in writing to do otherwise. No reference will be made in oral or written reports that could link you to the study. Your de-identified data may be used in future research, presentations or for teaching purposes by the Principal Investigator listed above.

WHOM SHOULD I CONTACT IF I HAVE QUESTIONS?

You may ask any questions about the research at any time. If you have questions about the research at any time, you should contact the Principal Investigator, Doug Asbjornsen at 509-389-4410 or dasbjornsen@gmail.com.

If you have questions about your rights as a research subject you should contact the Seattle Pacific University Institutional Review Board Chair at 206-281-2201 or IRB@spu.edu.

Your participation is completely voluntary. If you begin participation and change your mind you may end your participation at any time without penalty.

By following the link below and completing the KAI online, you confirm you have read this consent form, had an opportunity to ask any questions about your participation in this research and voluntarily consent to participate. In no way does this waive your legal rights nor release the investigators, sponsors, or involved institutions from their legal and professional responsibilities. Please retain a copy of this form for your records.

Participant's Name (please print):_____

Participant's Signature: _____ Date: _____

PI's Name (please print):_____

PI's Signature:_____
Date:_____

Copies to: Participant   Principal Investigator

Appendix N
School Director IRB Consent Form

Engaging the culture, changing the world®
Seattle Pacific
UNIVERSITY

INFORMED CONSENT: SCHOOL BOARD MEMBER
Title of the Study: Cognitive Style and Conflict on Superintendent-School Board Teams

Principal Investigator (PI): Doug Asbjornsen, dasbjornsen@gmail.com, 509-389-4410

DESCRIPTION OF THE RESEARCH

The purpose of this mixed-method study is to identify possible cases of conflict on superintendent-school board teams where cognitive style, as defined by the Kirton Adaption-Innovation Theory (A-I Theory), may be a contributor. An explanatory participation selection model using the Kirton Adaption-Innovation Inventory (KAI) and personal interviews will assist in identifying possible cases to investigate. If found, this study will document these cases as examples where the knowledge of A-I Theory and individual KAI scores may help explain the source of the conflict and possibly lead to another tool that can be used for mitigation.

You are invited to be part of Phase Two of this study because you are a current school board member in a school district served by ESD 101, 105, 123, or 171 and your superintendent has volunteered your team to participate with your approval.

This study includes public school superintendents and selected school board members in eastern Washington State between the ages of 21 and 99.

The research will take place in/at **Seattle Pacific University**, 3307 3rd Ave West, Seattle WA and by phone or in-person in/at a location convenient to you. Data collection and analysis will take place in the office of the PI located at 2707 W. Courtland Ave, Spokane WA.

WHAT WILL MY PARTICIPATION INVOLVE?

You are part of one of (up to five) superintendent-school board teams invited to participate in Phase Two of this study. If you decide to participate in this research you will be asked to take the Kirton Adaption-Innovation Inventory (KAI) on-line at your personal and/or district computer. This normally takes 5-10 minutes to complete. You will then be asked to participate in an interview by phone or personal visit by the PI at a time and location convenient to you. It is anticipated most interviews will take approximately 15-20 minutes, but may take up to one hour to complete and may be tape-recorded with your permission.

It is anticipated this study will take place in March and April, 2017, with most the data collected in March, with possible follow-interviews in early April. Your participation will last for no more than the two months listed above. You may withdraw from the study at any time.

ARE THERE ANY RISKS TO ME?

This study is designed to be "minimal risk" in that all KAI scores and information gathered from interviews are considered confidential and are not shared with others without the participant's consent. The importance and critical nature of the superintendent and school board member relationship is well understood and appreciated. It is also known these relationships at times can be sensitive and uncomfortable, especially in identifying and reporting upon conflict within the governance team. All effort will be made to mitigate these threats, including the exclusion of data being reported in this study if anticipated it would bring any harm to one or more individuals on the superintendent-school board team.

Seattle Pacific University and associated researchers do not offer to reimburse participants for medical claims or other compensation. If physical injury is suffered in the course of research, or for more information, please notify the investigator in charge, Doug Asbjornsen at 509-389-4410.

ARE THERE ANY BENEFITS TO ME?

By completing the KAI on-line, you will receive your scores electronically embedded in an eight-page feedback document explaining the Kirton Adaption-Innovation Theory and information on how to interpret your scores. The approximate cost to the PI is $8.00 per inventory. As a participant, there is no cost to you. After all data collection is complete (KAI and all interviews), you will be offered an in-service for your superintendent-school board team where A-I Theory is explored more in-depth and the practical application of KAI scores is discussed. This in-service will be provided by the PI in your district and at a time mutually agreed upon at no charge.

HOW WILL MY CONFIDENTIALITY BE PROTECTED?

While there will probably be publications as a result of this study, your name will not be used nor will you be identified in any way. The information in the study records will be kept confidential. Data will be stored securely and will be made available only to persons conducting the study unless you specifically give permission in writing to do otherwise. No reference will be made in oral or written reports that could link you to the study. Your de-identified data may be used in future research, presentations or for teaching purposes by the Principal Investigator listed above.

WHOM SHOULD I CONTACT IF I HAVE QUESTIONS?

You may ask any questions about the research at any time. If you have questions about the research at any time, you should contact the Principal Investigator, Doug Asbjornsen at 509-389-4410 or dasbjornsen@gmail.com.

If you have questions about your rights as a research subject you should contact the Seattle Pacific University Institutional Review Board Chair at 206-281-2201 or IRB@spu.edu.

Your participation is completely voluntary. If you begin participation and change your mind you may end your participation at any time without penalty.

By following the link below and completing the KAI, you confirm you have read this consent form, had an opportunity to ask any questions about your participation in this research and voluntarily consent to participate. In no way does this waive your legal rights nor release the

investigators, sponsors, or involved institutions from their legal and professional responsibilities. Please retain a copy of this form for your records.

Participant's Name (please print):_____

Participant's Signature:_____   Date:_____

PI's Name (please print):_____

PI's Signature:_____
Date:_____

Copies to: Participant   Principal Investigator