

The Effects of Leader–member Exchange and Cognitive Style on Student Achievement: A
Mixed Methods Case Study of Teacher–student Dyads

Chaney Wayne Mosley

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Thomas W. Broyles, Chair

Eric Kaufman

Mido Chang

Michael Evans

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ABSTRACT

The purpose of this embedded sequential explanatory case study with a quantitative→qualitative two-strand design of inquiry was to explain how the quality of teacher-student relationships and the gap of cognitive styles between teachers and students impact student achievement. The population for the quantitative strand of research was comprised of 11 career and technical education (CTE) teachers and 210 CTE students, representing six disciplines within CTE. The study occurred in a suburban high school in western North Carolina. Leader-member Exchange (LMX) theory and Adaption-innovation theory guided the research.

In the quantitative strand, the Kirton Adaption-Innovation Inventory was used to measure the cognitive style of teachers and students, a researcher developed survey was used to measure dyadic intensity, the Leader-Member Excellence—Shared-Leadership Exchange instrument was used to measure the perceived quality of dyadic relationships between teachers and students, and the North Carolina CTE end of course tests were used to measure student achievement in CTE classes. Additionally, demographic information was collected from teacher and student participants. In the qualitative strand, four teachers and eight students were interviewed. The purpose of the qualitative strand was to investigate how teachers and students describe their dyadic relationships. Data from both the quantitative and qualitative strands were mixed to allow for a stronger interpretation and explanation of the quantitative and qualitative results.

Statistically significant relationships were identified among the various dimensions of teacher-student relationships. There was a weak, positive relationship between dyadic intensity and student GPA. A weak, positive relationship was found between dyadic intensity and teacher

LMX. There was a weak, positive relationship between dyadic intensity and student LMX. There was a weak, positive relationship between student GPA and teacher LMX. A moderate, positive relationship was found between student GPA and student LMX. A moderate, positive relationship was found between student GPA and student achievement. Additionally, there was a moderate, positive relationship between teacher LMX and student LMX. A path analysis of quantitative data indicated that student GPA had a significant effect on teacher LMX. Teacher LMX and student GPA had a significant effect on student LMX. Lastly, student GPA had a significant effect on student achievement. Qualitative data validated the quantitative findings. Further, five themes surfaced from the qualitative data providing support for additional findings.

The researcher recommended future investigation of the impacts of leader-member exchange and cognitive style on student achievement using alternative indicators of student achievement, an exploration of how involvement in a career and technical student organization (CTSO) interacts with teacher-student relationships and student achievement through the lens of leader-member exchange, and an examination of the impacts of leader-member exchange and cognitive style on student achievement outside of the context of CTE. The quality of teacher-student relationships from both the teacher's perspective and the student's perspective are affected by a student's grade point average. Student grade point average has a significant effect on student achievement. Much remains unknown about the antecedents of teacher-student relationships and how the relationships between teachers and students may interact with student achievement.

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While the words on the pages that follow represent the work of one study, they embody the efforts of many. Completing this dissertation would not have been possible without the guidance, assistance, encouragement, and support from numerous people and organizations. As this journey began in Blacksburg, VA, undoubtedly, the faculty and staff of Virginia Tech's Agricultural and Extension Education (AEE) department have been instrumental in my endeavors and success. Thank you for providing educational and professional development opportunities during my time spent on campus.

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and, ultimately, causing me to question how teachers impact the motivation of students. Thank you both for your commitment to my dissertation and providing a constructive perspective through the process.

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While writing this dissertation, I could not help but reflect on my own experiences as a student and a teacher and realize that much of what I believe about education is the result of personal experiences and interactions with teachers and students. While I experienced many teachers whose classes I thoroughly enjoyed, there are some who deserve mention here. I would not be in this profession were it not for Bruce Haley, my high school [CTE course] teacher and FFA advisor. Bruce, in addition to teaching me integers and how to tie a tie, you gave me an introduction to the [CTE course] industry, which led me to where I am today – thank you. Suzetta Furlong, in my head I can still hear the chant “b, con a, es ba, b, con e, es be”, etc. Your passion for teaching was a catalyst for my own efforts as a teacher and the authenticity with which you constructed relationships with students was truly inspirational. Muchas gracias, señora, que era una fantástica profesora. Additionally, Dr. Cliff Ricketts and Dr. John Ricketts deserve thanks. Gentlemen, both of you have continuously encouraged me and repeatedly said, “I’m proud of you buddy.” I do not know when, why, or how it occurred, but at some point you both saw something in me that I did not see in myself. Thanks for the push! To my students at Temple High School in Temple, GA – a tremendous thank you. It was at Temple High that I honed in on my skills and developed my craft as a teacher. Through you, I saw the benefits of

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Chapter 1

Introduction

Is a teacher a leader? Answers to this question might vary, depending on one's personal philosophy and definition of leadership. Dewey (1933) posited that teachers are intellectual leaders of a social group. Further, in considering the commonly accepted notion that leadership is a process that involves influence, teachers are leaders given the manner in which they influence students in their classrooms. As Dewey (1933) noted, "Everything the teacher does, as well as the manner in which he does it, incites the child to respond in some way or another, and each response tends to get the child's attitude in some way or the other" (p. 59). Whether recognized or not, teachers emerge as leaders in classrooms, which are reflective of a quickly and ever changing society (Rallis, Rossman, Phelgar, & Abeille, 1995).

Numerous practitioners have examined the leadership of teachers (Berry, Johnson, & Montgomery, 2005; Childs-Bowen, Moller, & Scrivner, 2000; Crowther & Olsen, 1997; Frost, 2003; Frost & Durrant, 2003; Harris, 2003; Smylie, 2005; York-Barr & Duke, 2004). These investigations, however, viewed the leadership roles that teachers assume within their schools and among peers. Evident throughout the scholarly literature is the lack of agreement on teacher leadership and the corresponding ambiguity of the definition of this concept. A general lack of empirical research related to teacher leadership is evident as well (Harris, 2003; York-Barr & Duke, 2004). From the literature, it is clear that concepts of teacher leadership typically focus on activities including shared decision making, idea sharing, mentoring other teachers, and serving in roles such as department head or lead teacher, among others. The present study employs a different description of teacher leadership.

Borrowing from Katyal and Evers (2004), the researcher operationally defines teacher leadership as the influence of teachers on students in terms of instructional guidance. This

definition of teacher leadership allows the researcher to expand on the influential relationship between teachers and students in the present study. While there is little research of teacher leadership in this regard, some (Alexander, Elsom, Means, & Means, 1971; Farr, 2010; Katyal & Evers, 2004; Larkin, 1973) have advanced the notion of teachers as classroom leaders. A prominent example of teachers as classroom leaders comes from Teach for America, an alternative teacher licensure nonprofit organization that embodies the idea of teachers as leaders. As explained by Farr (2010), Teach for America, which builds a corps of recent college graduates that commit to teaching in high-need areas across the United States in an effort to combat educational inequity, trains its members in accordance to a leadership framework. This framework, appropriately called Teaching As Leadership, is grounded in principles of leadership “employed by successful leaders in any challenging context” (Farr, 2010, p. 4). By following the Teaching As Leadership framework, teachers trained through Teach for America continuously promote academic success in their classrooms, which is supported by significant, documented academic gains of their students (Farr, 2010). Undoubtedly, teachers influence the motivation of students in their classrooms.

Student motivation is a topic that solicits disagreement from professionals regarding what it is, where motivation originates, and what affects motivation. Early views of motivation held that it was internal, while later views posited that external forces were the cause of motivation (Schunk, Pintrich, & Meece, 2002). Assigning a derivative of motivation is challenging because of the multifaceted arguments and theories of motivation. The task of identifying a primary source is further complicated by the varying paradigms of learning. Bearing in mind that motivation can be derived from teacher actions or student uniqueness, the relationships between teachers and students seem plausible for explaining student performance in the

classroom. Therefore, studies of teacher leadership should focus on the dyadic relationships between teachers and students.

Nearly forty years ago, Brophy and Good (1974) identified a gap in the research of teacher-student relationships. They asserted, “one flaw in much of the research that has looked at naturalistic behavior in classrooms has been the stress upon teacher behavior directed toward the entire class rather than toward individual students” (p. 3). Investigating interactions between teachers and students, while treating students as an entire class or group, would not be troublesome if teachers did not vary their interactions from one student to another; however, this is not the case (Brophy & Good, 1974). While some studies examining the teacher as leader and the corresponding impact on students have taken place at the college level—as demonstrated later in the literature review—relatively few have undertaken the challenge of investigating the concept of teacher as leader in the secondary setting. Brophy and Good (1974) cautioned against applying findings from studies using college students to the secondary setting because students in secondary education may be less motivated than college students. Therefore, an empirical investigation of the dyadic relationships between teachers and students at the secondary level and the corresponding effects on student achievement is timely. The present study investigates the phenomenon of teacher-student relationships and the corresponding impact of such relationships on student achievement. The study is introduced in this first chapter.

Conceptual Framework

The researcher developed a visual model that provides conceptual framework for the present study, shown in Figure 1.1. In the model, two independent variables are shown to impact the quality of teacher-student relationships from both the teacher (teacher LMX) and student

(student LMX) perspective: cognitive gap and dyadic intensity. Cognitive gap is a measure of the difference between the cognitive style of a student and the cognitive style of a teacher. Dyadic intensity is a measure of the degree to which a teacher and a student have interacted, which includes the duration of knowing one another as well as interaction with one another outside of the regular classroom. The model continues to illustrate how teacher LMX impacts student LMX. Finally, the model shows how three independent variables—cognitive gap, teacher LMX, and student LMX—impact student achievement.

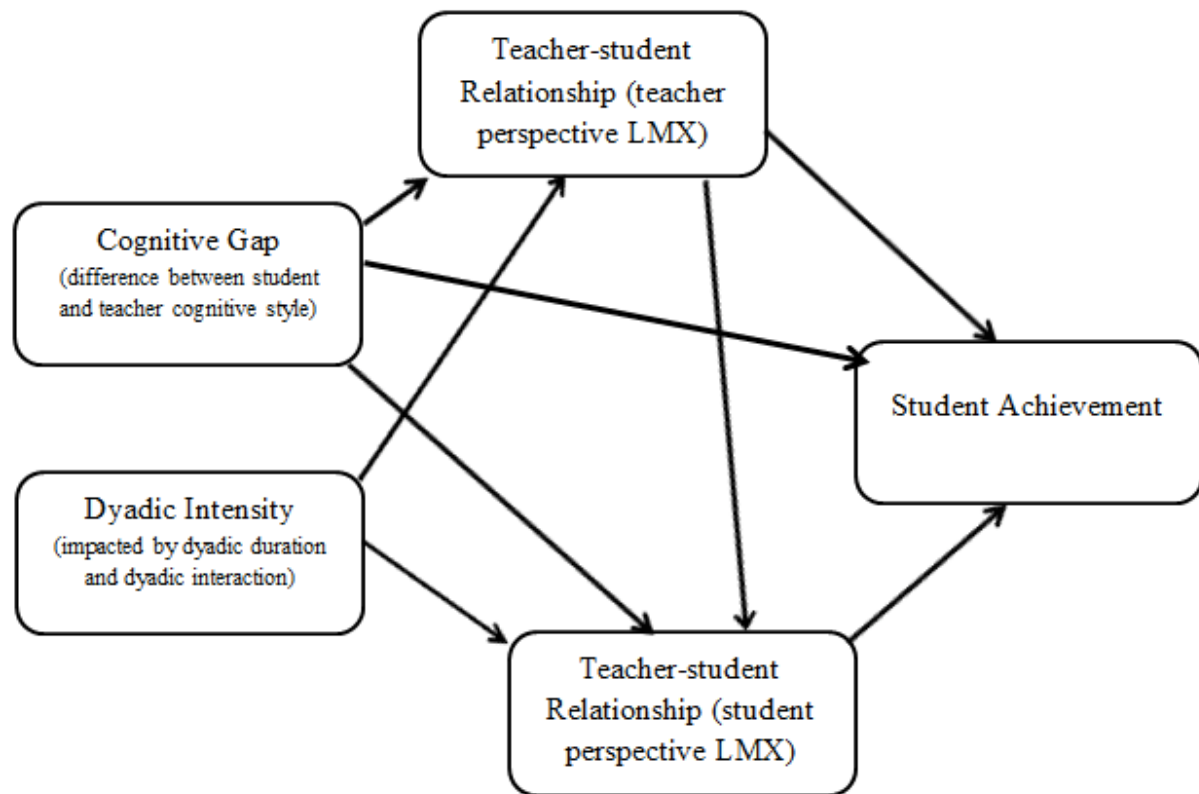


Figure 1.1. Visual model of the conceptual framework depicting the hypothesized interactions of variables affecting student achievement.

Problem Statement

In a classroom, relationships inevitably form between teachers and students. The type and quality of relationships between teachers and students can vary depending on a variety of

factors. Leader-member exchange (LMX) theory reasons that subordinates who have a high-quality relationship with their leader are willing to do more than is required (Northouse, 2010). If a teacher, as a classroom leader, could foster high-quality relationships with all students, then, would students, as subordinates, be willing to work harder in the classroom? If so, total student achievement and learning outcomes might increase. While many leadership theories have been empirically applied to educational settings, studies of LMX theory involving K-12 education are virtually nonexistent. When considering LMX, antecedents of relationship quality are of interest. One such precursor to the quality of relationships between teachers and students could be the difference in cognitive style.

Cognitive style, as explained in Kirton's (2003) adaption-innovation (A-I) theory, references one's preference for solving problems. A-I theory refers to the differences between individual preferences for solving problems as cognitive gap (Kirton, 2003) and describes the detrimental effects of cognitive gap when working with others. A benefit of applying A-I theory to an educational context is the potential that the theory offers for facilitating positive working relationships between teachers and students. A-I theory holds that problems of communication and collaboration increase as the gap between peoples' cognitive styles increases (Kirton, 2003). If large cognitive gaps exist between teachers and students, causing problems in the dyadic relationship, it is possible that student achievement will be negatively impacted.

Involving cognitive style in the investigation of teacher-student relationships may lead to a deeper understanding of the phenomenon. A lack of understanding exists in regard to how cognitive gap and teacher-student relationship quality interact with one another and impact student achievement. As teachers strive to lead students to academic success, the present

research has the potential to alter the ways in which teachers interact with students. Thus, the present study expands upon existing research in the areas of LMX and cognitive style.

Need for the Study and Professional Significance

Involving cognitive style in the investigation of teacher-student relationships may lead to a deeper understanding of those relationships, and the literature identifies the need for simultaneously exploring teacher-student relationships and cognitive styles numerous times. Kirton, Bailey, and Glendinning (1991) suggested that investigating the impact of cognitive style on interactions between teachers and students would enhance the understanding of the educational process. Therefore, “continued research into cognitive style in the educational context must include consideration of the cognitive styles of the pupils and their place in the complex interaction of teachers” (Kirton, Bailey, & Glendinning, 1991, p. 454). Further, Jablokow, Vercellone-Smith, and Richmond (2009) call for an investigation of cognitive gaps between teachers and students and how such gaps impact the educational experience. Because the actions of teachers influence how relationships between students and teachers develop, educators need to understand the messages they unintentionally send to students and the impact those messages may have (Puccio, Talbot, & Joniak, 1993). Specifically, many are concerned about how cognitive style differences could impact student achievement.

According to Jablokow, Vercellone-Smith, and Richmond (2009), educational outcomes may be enhanced when the cognitive styles of students and teachers match. However, after examining cognitive style in a college setting, Friedel and Rudd (2009) suggested that more research was needed regarding cognitive gap between students and teachers in different academic settings where teachers and students collaborate. The high school classroom affords an opportunity for expanding the research. Jablokow, Vercellone-Smith, and Richmond (2009)

agree that encouraging future research that explores cognitive gap between teachers and students, the impact of cognitive gaps on student and teacher perceptions of one another, and the potential affects that cognitive gap may have on student achievement. The cognitive style of the teacher could lead to the “instructor inadvertently favoring students with cognitive styles closer to his or her own; or possibly believing a student has a low cognitive level, when in fact the student has high intelligence, but has a greatly dissimilar cognitive style” (Friedel & Rudd, 2009, p. 42).

LMX is a measure of the quality of the relationship between a leader and a subordinate, but relationship quality can be impacted by a variety of factors including duration of the relationship, intensity of the relationship, or possibly cognitive style. A-I theory explains that communication problems between people worsen as the gap of cognitive style increases. Considering the destructive potential of a large cognitive gap between two people, examining the effects of cognitive gap on relationship quality in an educational setting is critical. Friedel and Rudd (2009) warned that while student engagement may not be impacted by cognitive gap, a difference in style between teachers and students could impact relationships with other classroom components such as a student’s preference for completing assignments or a teacher’s use of subjective assessments. A lack of understanding exists in regard to how cognitive gap and teacher-student relationship quality interact with one another and impact student achievement. As teachers strive to lead students to academic success daily in efforts to meet state and federal mandates of student achievement, this research is opportune and necessary and has the potential to alter the ways in which teachers interact with students. The present study expands upon existing research in the areas of LMX and cognitive style.

Purpose of the Study

The present study investigates how the quality of teacher-student relationships and the gap of cognitive styles between teachers and students impact student achievement as demonstrated by student scores on a standardized end of course test. The study will be guided by the following research questions:

1. What are the relationships between cognitive gap between teachers and students, dyadic intensity, LMX quality, and student achievement?
 - a. What dimensions of teacher-student relationships affect LMX quality from the teacher perspective?
 - b. What dimensions of teacher-student relationships affect LMX quality from the student perspective?
2. What are the effects of cognitive gap, teacher LMX, and student LMX on student achievement?
3. How do teachers and students describe the development of teacher-student dyadic relationships and the impact of teacher-student relationships on student achievement?
4. How do the descriptions of dyadic relationship development offered by teachers and students converge with the quantitative results?

Personal Definition of Leadership

While leadership is a term with multiple designations (Bolden, 2004), Northouse (2010) contends that each person has an intuitive understanding of what is meant by leadership. Definitions of leadership are: (a) “a process whereby an individual influences a group of individuals to achieve a common goal” (Northouse, 2010, p. 3), (b) “the process of influencing

the activities of an organized group in its efforts toward goal setting and goal achievement” (Stogdill, as cited in Jackson & Parry, 2008, pp. 12-13), and (c) “an influence relationship among leaders and followers who intend real changes that reflect their mutual purposes” (Rost, as cited in Jackson & Parry, 2008, p. 15), among others. The researcher’s definition of leadership is the process of assembling and motivating a group of people to work toward accomplishing a common goal. Similarities between the researcher’s definition and those presented above include notions of leadership as a process that involves influence, the importance of goals, and shared purpose. Differences between the definitions also exist inasmuch as the researcher’s definition does not put emphasis on the requirement of goal achievement. Defining leadership in a way that requires goal achievement indicates that those who lead groups of people toward a common goal but do not accomplish the goal are, in fact, not engaging in leadership; however, this is not the belief of the researcher. Additionally, the researcher’s definition mentions the assembling of a group, while others do not. The researcher views the leader as an individual responsible for pulling together the group to be motivated, with the primary function, supported by Kotter (1990), being the production of change and movement.

Definitions

Many terms are frequently used throughout this dissertation. The description of each term provided below serves as the operational definition for the present study.

Adaption-innovation (A-I). In the context of problem solving, Adaption-innovation relates to the style in which people think and, conversely, describes the differences between individual preferences for the ways in which people solve problems (Kirton, 2003).

Career and technical education (CTE). Career and technical education is a federally funded program that has been in existence since the Smith-Hughes Act of 1917 was passed. “The goal of CTE is to prepare students for postsecondary careers upon graduation from high school or college” (Gentry, Peters, & Mann, 2007).

Career and technical student organization (CTSO). Career and technical student organizations provide students with career exploration, equip students with leadership skills, and prepare students for productive citizenship through intense involvement in specific areas of career and technical education (Reese, 2003).

Cognitive gap. Cognitive gap is the difference between individual preferences for solving problems as cognitive gap (Kirton, 2003).

Cognitive style. Cognitive style references one’s preference for organizing and solving problems (Kirton, 2003).

Disturbance. A disturbance is a variable in a path model that “represents all other influences on the outcome variables other than those shown in the model” (Keith, 2006, p. 217).

Dyad. A dyad is something that has two distinct elements that make a pair. The present study focuses on teacher-student dyads.

Dyadic intensity. Dyadic intensity references the collective of in- and out-of-class interactions between a teacher and student that contribute to the overall strength of the relationship.

Endogenous. Endogenous variables are dependent variables in a causal model whose value is determined by relationships in the model (Olobatuyi, 2006).

Exogenous. Exogenous variables are independent variables in a causal model whose values are not determined by relationships in the model (Olobatuyi, 2006).

Leadership. Leadership is the process of assembling and motivating a group of people to work toward accomplishing a common goal.

Leader-member exchange (LMX). The interactions that occur between leaders and subordinates are referred to as the leader-member exchange. In the present study, LMX references the quality of the dyadic relationships between leaders and followers (Northouse, 2010).

Motivation. The process of motivation is “a change in the rate, frequency of occurrence, or form of behavior (response) as a function of environmental events and stimuli” (Schunk, Pintrich, & Meece, 2002, p. 20).

Path analysis. Path analysis is a statistical procedure “used to test the possibility of a causal connection among three or more variables” (Fraenkel & Wallen, 2000).

Student LMX. Student LMX references the perceived quality of the relationship between a teacher and student from the student perspective.

Teacher LMX. Teacher LMX references the perceived quality of the relationship between a teacher and student from the teacher perspective.

Summary

Chapter one introduced the present study by making the case for teachers as leaders in classrooms. There is much disagreement regarding the definition of teacher leadership. Many concepts of teacher leadership focus on teachers engaging in leadership activities involving other teachers, such as shared decision making, idea sharing, mentoring other teachers, and serving in roles such as department head or lead teacher. The present study employs the definition of

teacher leadership as the influence of teachers on students in terms of instructional guidance, focusing on the influential relationship between teachers and students.

This study investigates the phenomenon of teacher-student relationships. The conceptual model presented in chapter one illustrates how cognitive gap, dyadic intensity, teacher LMX, and student LMX interact and impact student achievement. The model is supported by leader-member exchange (LMX) theory and adaption-innovation (A-I) theory. LMX theory reasons that subordinates who have a high-quality relationship with their leader are willing to do more than is required. A-I theory describes how the differences between individual preferences for solving problems, referred to as cognitive gap, can be detrimental in a working relationship. Investigating how cognitive gap and teacher-student relationship quality interact with one another and impact student achievement could lead to a deeper understanding of teacher-student relationships.

The purpose of this study is to explain how the quality of teacher-student relationships and the gap of cognitive styles between teachers and students impact student achievement. Because the study positions teachers as leaders and applies a leadership theory to investigate teacher-student relationships, the researcher expanded on his personal definition of leadership. The researcher's definition of leadership is the process of assembling and motivating a group of people to work toward accomplishing a common goal. Definitions of frequently used terms in the dissertation were provided to aid the reader in understanding the context in which each term is applied.

Chapter 2

Review of Literature

The present study builds upon the notion of teachers as classroom leaders, giving consideration to teaching and learning theory. The study is grounded in two specific theories that the researcher feels complement each other well for the intended purposes – Leader-member Exchange (LMX) theory and Adaption-Innovation Theory (A-I theory). Chapter two begins with a review of various theories of leadership in relation to teachers, and is followed by a presentation of selected learning theories, giving attention to student motivation. A theoretical literature review of LMX theory, followed with a review of empirical literature related to LMX theory is provided, as well as a theoretical literature review of A-I theory and a review of empirical literature related to A-I theory.

Teaching as Leadership

The relationships between teachers and students align with and are supported by numerous theories of leadership. When viewing leadership as a process, leadership “resides in the context of the interactions between leaders and followers” (Northouse, 2010, p. 5). Some leaders hold formal positions, where leadership is assigned to them based on position in an organization, while others may earn the designation of leader when thought to be the most influential person in a group (Northouse, 2010). Teachers hold formal positions of leadership, and are, therefore, assigned leaders – students are their followers. Because leadership is distinguished as an influential process, the notion of power is significant.

Northouse (2010) described power as “the capacity or potential to influence” (p. 7) and relates power to leadership because power is a component of influence. Those with power have

the capability of changing the beliefs, attitudes, and actions of others (Northouse, 2010). As such, teachers are an example of people with the potential to influence others, and, consequently, have power. French & Raven (2001) identified and defined five bases of power: (a) reward power – based on having the ability to provide rewards to followers, (b) coercive power – associated with the ability to penalize others, (c) legitimate power – derived from formal job authority and status, (d) referent power – determined by the followers liking for the leader, and (e) expert power – derived from the perception of followers that the leader is competent. Considering the five bases of power identified by French and Raven (2001), teachers, by nature of their job, have legitimate power; however, they could also possess reward power considering that they may provide rewards to students who perform well, coercive power given their ability to penalize students in regard to grades and discipline, referent power if the teacher is popular or adored by students, and expert power when students recognize the teacher as competent and capable to teach the particular subject. This combination of power can be distinguished into two major types – position and personal (Northouse, 2010). Positional power encompasses legitimate, reward, and coercive power, while personal power is comprised of referent and expert power. While teachers could exhibit all types of power, they are granted position power due to their rank in the organization of educational systems. In addition to how individuals come into leadership roles and the power associated with such roles, attention should be given to various theories of leadership to further develop the role of teacher as leader.

One of the earliest systematic approaches to leadership study focused on the trait approach, which aims to identify the qualities and personality characteristics of leadership (Jackson & Parry, 2008). Assigning certain definitive traits of leadership is difficult, though, some personality traits are associated with effective leadership (Northouse, 2010). The

commonly accepted *Big Five* personality factors are neuroticism, extraversion, openness, agreeableness, and conscientiousness (Goldberg, 1990; McCrae & Costa, 1987). In studying these five traits, Judge, Bono, Ilies, and Gerhardt (2002) identified extraversion as the personality type most associated with leadership, followed by conscientiousness, openness, low neuroticism, and agreeableness, respectively. Though the trait approach focuses only on the leader and does not give consideration to followers or situations, it is still applicable to the relationships between teachers and students. Corresponding with the findings of Judge, Bono, Ilies, and Gerhardt (2002), Kent and Fisher (1997) found extraversion of teachers to positively impact classroom environment, specifically in regard to student cohesion. As leadership involves influencing an organized group, cohesion is essential to leadership. Therefore, the ability to unify a classroom, which is enhanced for extravert teachers, aids in successful classroom leadership. In addition to traits, leadership styles are also important to the relationships between teachers and students.

The style approach to leadership categorizes leadership behaviors into two general kinds – task behaviors, which assist followers in meeting objectives, and relationship behaviors, which put followers at ease in a group. The purpose of the style approach is to clarify how leaders combine the two types of behaviors to influence subordinates (Northouse, 2010). As teachers facilitate the learning process in their classrooms, some situations would call for a more task oriented approach, such as organizing lessons, assessing performance and providing feedback, while other situations, such as when a new student comes into a classroom or a student is uncertain about his ability to perform a task, might necessitate a relationship oriented approach. While the style approach is descriptive of how leaders behave, the situational approach offers a prescription of how leaders should act in different situations (Northouse, 2010).

As previously mentioned, varied leadership styles are needed in different situations. The situational approach to leadership stresses the need for leaders to “match their style to the competence and commitment of the subordinates,” (Northouse, 2010, p. 5) holding that more effective leaders distinguish the needs of followers and act accordingly. Blanchard (1985) developed a model of situational leadership that recommends the degree to which leadership style should be directive or supportive, depending on the developmental level of followers. The situational approach is very applicable to the relationships between teachers and students. Teaching requires that educators evaluate teaching situations, consider the needs of students, and adapt teaching style to better support learning (Hunt, 1980; Hunt, 1981). Similarly, Hyman and Rosoff (1984) recommended that teachers acknowledge that teacher-student relationships are constantly changing because student learning needs change. That teachers adapt to various situations to better promote student learning is reflective of the situational leadership approach, where teachers change the degree of directive and supportive behavior in accordance with student needs; though, this approach does not clearly stipulate how leaders should respond differently in one-on-one versus group situation requirements. From an educational perspective, an unanswered question is whether or not, when applying the situational approach in the classroom, teachers should match their style to the overall needs of the entire class or the requirements of individual students. Regardless, different teaching circumstances do require an analysis of the situation so that teachers can choose courses of action that will motivate students while removing potential obstacles to success, as described in the path-goal theory of leadership.

Path-goal theory assumes “that subordinates will be motivated if they think they are capable of performing their work, if they believe their efforts will result in a certain outcome, and if they believe that the payoffs for doing their work are worthwhile” (Northouse, 2010, p.

125). Motivating followers in this regard, then, requires the leader to provide clear coaching that guides followers around roadblocks and makes work satisfying (Northouse, 2010).

Prescriptively, path-goal theory encourages leaders to select a leadership style, either directive, supportive, participative, or achievement oriented, that is appropriate to the needs of followers and their associated tasks (Northouse, 2010). The pragmatic nature of path-goal theory makes it fitting for teachers in the classroom who must attend to the needs of their students in order to foster self efficacy and confidence, though this theory only positions leadership as a one-way experience, where followers may become dependent (Northouse, 2010). Relationships between leaders and subordinates are central to leadership, as is evident in LMX theory.

LMX theory “emphasizes the relational bases and influence tactics that leaders use and how they vary vis-à-vis followers,” (Glynn & DeJordy, 2010, p. 125) suggesting that leaders exchange their resources to promote subordinate performance (Graen & Scandura, 1987). Prior to LMX theory, leadership was viewed as something that leaders did to subordinates (Northouse, 2010), but, in shifting attention to the dyadic relationships between leaders and followers, Dansereau, Graen, and Haga (1975) explained that leaders do more for subordinates who go beyond normal job descriptions and expectations while those who choose to not take on additional responsibilities gain membership in the out-group. Leaders provide in-group members with more information, have more confidence in them, and show more concern for them; additionally, in-group members are more communicative, dependable, and work harder (Dansereau, Graen, & Haga, 1975). Consequently, out-group members “are less compatible with the leader and usually just come to work, do their job, and go home” (Northouse, 2010, p. 150). The implications for LMX theory in education are both exciting and disturbing, as will be

discussed later in this chapter. Ultimately, the brief descriptions of the leadership theories provided support the position that teachers are leaders.

Learning Theory and Student Motivation

The historical evolution of learning theories includes multiple paradigms that view the process of learning from many angles. While each theoretical perspective is unique, a pivotal construct found in most learning theories is motivation. Perhaps the three most highly recognized and widely debated paradigmatic models of learning include behaviorism, cognitivism, and constructivism, and as each developed, so did the concept of motivation. While the behavioral perspective focuses on extrinsic motivation and the cognitive standpoint deals with intrinsic motivation, a description of all three viewpoints better highlights the role of motivation in regard to how people may learn.

Behaviorism rejects the notion that action is a result of internal (cognitive) processing; rather, behavior is a result of environmental stimuli. In regard to learning, behaviorism does not so much suggest how learning occurs; instead, this theory purports that learning is explained by observable behavior in regard to an organism's environment (Driscoll, 2005). More specifically, this theory focuses on the role of the learner, the nature of learning, and the generality of learning principles (Burton, Moore, & Magliaro, 1996). Often incorrectly associated with behaviorism and the role of the learner is the notion that learners are passive; however, the theory suggests that learners are active respondents who "learn by doing, experiencing, and engaging in trial and error" (Burton, Moore, & Magliaro, 1996, p. 9). According to Burton, Moore, and Magliaro (1996), learning can be defined as a "change in behavior" (p. 9), indicating that learning is an observable action. Skinner (1969) suggested that the processes that encourage or hinder learning

are essentially collective to all organisms and behavior falls into one of two classes: respondent or operant. Respondent behavior is an involuntary action in response to stimuli, as was the case in Pavlov's salivating dog experiment (Windholz, 1997), whereas operant behavior is action that naturally occurs in an organism's environment, but not in response to stimuli. Essential to the theory of behaviorism is the concept of reinforcement.

Driscoll (2005) explained that reinforcement is the likelihood for an action to be repeated depending on whether or not it was rewarded. The purpose of this concept is for the teacher to create an environment that elicits a desired response. Regarding behavior management, a behavior (response) can either be strengthened or weakened depending on the type of reinforcement (positive or negative) and the nature of its associated consequence (satisfying or aversive) (Driscoll, 2005). Munson and Crosbie (1998) provided an example of how punishment (an aversive consequence) in computerized instruction encouraged students to spend more time reading and studying (weakening the response of racing) by rewarding students for correct answers in the form of payment, but requiring students to lose the same amount for each incorrect response. While effective in this example, Thorndike (as cited in Beatty, 1998) advised that "positive reinforcement was more effective than punishment" (p. 1148). Another example of reinforcement is found in the action of providing feedback. In the direct instruction model of teaching, providing students feedback on performance is critical to promoting the desired behavior (Magliaro, Lockee, & Burton, 2005). According to Magliaro, Lockee, and Burton (2005), students require feedback to know if they are performing tasks correctly, where positive feedback reinforces the correctly learned behavior and negative feedback weakens the incorrectly learned behavior.

The teaching of new behavior occurs through shaping, chaining, and fading (Driscoll, 2005). Shaping requires a contingent reinforcer that encourages the succession of events leading to the desired behavior (Driscoll, 2005). Inherently different to shaping, which is used for teaching simple behaviors, is the principle of chaining, which is reserved for more complex actions that involve already known, simpler behaviors (Driscoll, 2005). In chaining, the learner pieces the easier behaviors together, one at a time, until the desired action is accomplished. Fading involves the removal of discriminating stimuli (learned behavior) in the process of performing a new action to facilitate correct performance of the desired action (Driscoll, 2005). The maintaining of behavior can be encouraged through the use of various reinforcement schedules that are dependent on the situation and desired outcome (Driscoll, 2005).

Regarding motivation, behaviorism explains the process of motivation as “a change in the rate, frequency of occurrence, or form of behavior (response) as a function of environmental events and stimuli” (Schunk, Pintrich, & Meece, 2002, p. 20). Skinner (1953) explained that results of actions that are reinforcing increase the motivation to repeat behavior, whereas consequences that are punishing decrease the motivation to repeat behavior. Put simply, then, “motivation is defined by the rate or likelihood of behavior” (Schunk, Pintrich, & Meece, 2002, p. 20). In accordance with behavioral theories of learning, motivation is the result of environmental impacts.

While behaviorism emphasizes the manipulation of stimuli to effect students’ explicit performance, cognitivism focuses more on promoting mental processes (Ertmer & Newby, 1993). The cognitive position views the learner as an information processor, akin to a computer (Driscoll, 2005), focusing on “how information is received, organized, stored, and retrieved by the mind” (Ertmer & Newby, 1993, p. 58). Miller (1994) suggested that information was

remembered by organizing smaller pieces into chunks and Rogers (1969) argued that memory occurred when information was meaningful. Each of these notions of memory is woven into the fabric of the human informational processing model shown in Figure 2.1.

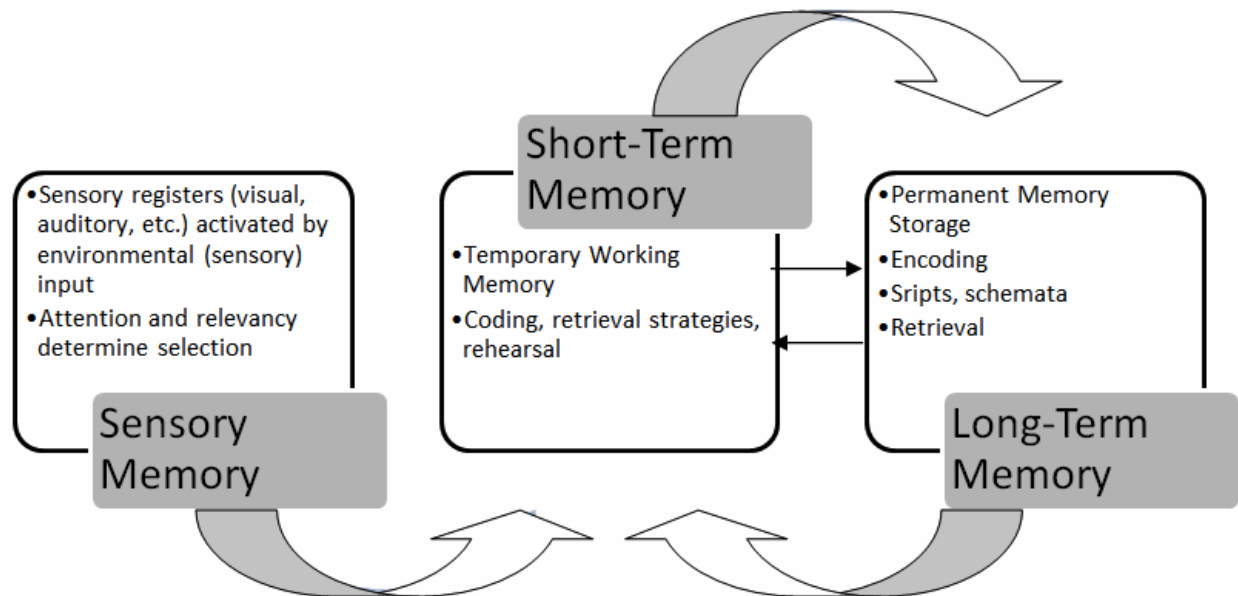


Figure 2.1. Human informational processing model.

The human informational processing model depicts the processes through which people receive, store, and retrieve information. The first box, labeled sensory memory, explains how sensory stimuli are registered as they are experienced through the human senses. Information presented at the sensory memory stage of information processing is held only for a short time, one to two seconds, and is then lost unless information is transferred into the short-term memory. The contents of sensory memory continually change as new stimuli are registered (Craik & Lockhart, 1972). At the sensory memory stage, attention to and relevancy of information are strong determinants of what is selected for transfer into short-term memory.

The second box in the human informational processing model details the operations that occur in short-term memory. At this stage, also referred to as working memory, information is processed by coding, retrieval strategies are determined, and rehearsal takes place. As with

sensory memory, information processed at this stage only lasts for a short time, at which point it is either discarded or transferred into long-term memory. Repetition, or rehearsal, is the critical determinant of what is retained (Craik & Lockhart, 1972), and there are limits as to the amount of information that can be processed in short-term memory. In his information processing learning theory, Miller (1994) introduced the concept of chunking, which is essential to cognitive processing in short-term memory. Miller (1994) claimed that short term memory could only hold five to nine chunks of information. A chunk is any meaningful piece of information and could refer to things such as numbers, words, chess positions, or people's faces. When coding chunks of information being received, learners create visual representations through the concept of imagery. According to Shepard and Cooper (1982), imagery is critical when it comes to learning and memory. This concept has been demonstrated as a useful tool for facilitating recall and is strongly related to creativity and problem solving abilities. In addition, imagery provides opportunities for mental rehearsal of tasks and activities and, in this way, is related to Schank's (1977) script theory, allowing one to fill in the blanks when in familiar situations.

The third box of the human informational processing model, long-term memory, explicates how knowledge is transferred from short-term memory, represented in long-term memory, and retrieved for working memory. In contrast to Miller's suggestion on the limits of capacity for short-term memory, seven plus or minus two, long-term memory can hold an unlimited amount of information without an expiration date by which knowledge will be discarded (Craik & Lockhart, 1972). Encoding, which is the alteration of information that will be stored in long-term memory, occurs after rehearsal. Information, at this point, has already been attended to, had relevancy attached to it, coded, and methods of retrieval have been determined. In this stage of memory, knowledge is represented in scripts (Schank & Abelson,

1977). Once in long-term memory, data can be retrieved and placed back into short-term, or, working memory, and scripts, or schema, will then be used to help learners process foreign information and acquire new knowledge; the pattern of encoding and retrieval is cyclical. Schema is critical to fostering retrieval. “Unless we can activate information when needed, it does us little good” (Bransford, 1979, p. 59).

Essentially, cognitivism holds the position that the components of instruction alone, including environment and actions of the teacher, cannot explain how learning occurs. As such, cognitivism posits that student motivation occurs by teaching and encouraging learners to use appropriate learning strategies (Ertmer & Newby, 1993). Cognitivism maintains that motivation is internal and, contrary to behavioral beliefs, cannot be observed (Schunk, Pintrich, & Meece, 2002); the products of motivation, however, are observable.

Unlike behaviorist or cognitivist approaches to learning, the constructivist belief is that people create, rather than acquire, meaning (Ertmer & Newby, 1993). Constructivist theory purports that “knowledge is constructed by learners as they attempt to make sense of their experiences” (Driscoll, p. 387). According to Jonassen (1991), “knowledge is a function of how the individual creates meaning from his or her experiences; it is not a function of what someone else says is true” (p. 10). This type of learning, then, places emphasis on active participation of learners (Phillips, 1995). A variety of instructional methods are available in constructivism that help accomplish instructional goals such as reasoning and critical thinking, retention, understanding, and use, cognitive flexibility, self-regulation, and mindful reflection and epistemic flexibility (Driscoll, 2005). Regarding the measurement of learning, much of constructivist theory emphasizes the process more than the product. In this regard, performance

is measured by reflection on the student's part and active involvement during the learning activities.

The constructivism approach to motivation shifts the focus from controlling or managing student learning to encouraging student learning (Schunk, Pintrich, & Meece, 2002). The constructivist approach, then, yields itself to motivational theory in accordance with teacher actions that encourage learning. For example, teachers may create agency for learning by giving students choice and control over learning tasks and provide opportunities for reflection which may allow students to realize that they need more information and, as such, are motivated to learn more. Further, if teachers provide opportunities for practice of ways of thinking and learning, interest, value, and self-efficacy may be fostered, which, in turn, may facilitate motivation. Ultimately, teacher planning and decision making can affect student motivation, as they design lessons that allow students to take stock of the learning experience and create meaning (Schunk, Pintrich, & Meece, 2002).

Teacher Impact on Motivation. Undeniably, teachers can influence student motivation in many ways. Examples of how teachers affect motivation are through planning and decision making, teaching practices, and serving as models for students. When planning lessons, teachers make decisions based on the characteristics and needs of students. Clark and Yinger (1979) noted that the most frequent reason teachers cite for deciding which methods to use was student motivation – teachers would often implement activities that would engage students in the learning process. Additionally, the ways in which teachers structure lessons can motivate students, because competitive and individualistic structures can inform students of their ability, and when students notice improvement, their efficacy improves and motivates them (Ames,

1984). Another way in which teachers can motivate students is through the use of effective teaching practices (Brophy & Good, 1986) and providing feedback, which can foster self-efficacy (Schunk, Pintrich, & Meece, 2002). Finally, as demonstrated by Bandura (1986), models can influence student motivation and many teachers also serve as models. The classroom and school environment also can impact motivation.

The classroom environment is a key motivating factor for students when classroom organization is multidimensional. Classroom management and school climate serve as mediators of student motivation as well. Rosenholtz and Simpson (1984) explained that dimensionality in a classroom is critical to student performance. Specifically, multidimensional classrooms, which offer a greater variety of activities that appeal to more diverse student interests, promote greater student motivation than unidimensional classrooms, which, through undifferentiated task structures, promote social comparison and may decrease student motivation for low-performing students (Rosenholtz & Simpson, 1984). Classroom management systems, which have established rules and procedures, organized activities, and keep students on task, promote learning and, ultimately, are more motivating (Levin & Nolan, 2000). Further related to environment and student motivation are recommendations from the National Research Council (NRC) (2004) to develop shared norms in a school, which include mission, vision, values, and beliefs. Shared norms facilitate a positive school climate, which can encourage motivation as well (National Research Council, 2004). The impact that teachers and learning environment can have on student motivation is obvious; however, motivation originates in the student.

According to Allport (1937), people are unique beings, continually changing and working toward goals. The notion of uniqueness in people was further propelled by Rogers (1969) with the claim that one's drive for learning is self-initiated, or internal. The operational definition of

motivation offered by Schunk, Pintrich, and Meece (2002), explained that “motivation is the process whereby goal-directed activity is instigated and sustained” (p. 4), requiring that activities be goal-directed. In teams, goals can be set by a leader; however, an individual is responsible for his own goal. Because no one can force another to have a goal, in educational settings, motivation is primarily derived from the student, and “school children often behave in direct response to their social environments” (Wentzel, 1996, p. 2). Little research has investigated the relationship between social development and classroom motivation (Wentzel, 1996). Interpersonal relationships between teachers and students, however, provide a social context for student motivation.

Leader-member Exchange Theory

Contrary to most theories of leadership which discuss leadership from the perspective of the leader or the follower, Leader-member Exchange (LMX) theory emphasizes the interactions that occur between leaders and subordinates, focusing on the quality of the dyadic relationship between leaders and followers (Northouse, 2010). Higher quality relationships between leaders and subordinates involve negotiations and are described as demonstrating mutual respect, support, trust, influence, and input in decision making, while lower quality relationships operate under a top-down influence from the leader, provide restricted support for the subordinate, and the interactions are more formal and based on contractual agreements (Graen & Uhl-Bien, 1995). As illustrated in Figure 2.2, Graen and Uhl-Bien (1995) explained that development of LMX theory can be viewed in four stages: (1) vertical dyad linkage (VDL), (2) leader-member exchange, (3) leadership-making and (4) team-making competence network. Each stage focuses on a different concept of the theory and is accompanied by varying levels of analysis. Stage one,

the vertical dyad linkage, explores the discovery of differentiated dyads and the level of analysis is the dyads within a work unit. Stage two, leader-member exchange, focuses on the heterogeneous relationship between superiors and subordinates and its outcomes; the level of analysis is the vertical dyad. Stage three, leadership-making, describes dyadic partnership building and, like stage two, the level of analysis is the vertical dyad. Finally, stage four, the team-making competence network, provides an expansion of dyadic partnerships to group and network levels with the level of analysis being collectivities as aggregations of dyads. Though the current research focuses on stage three, leadership-making, the literature review will address all four stages.

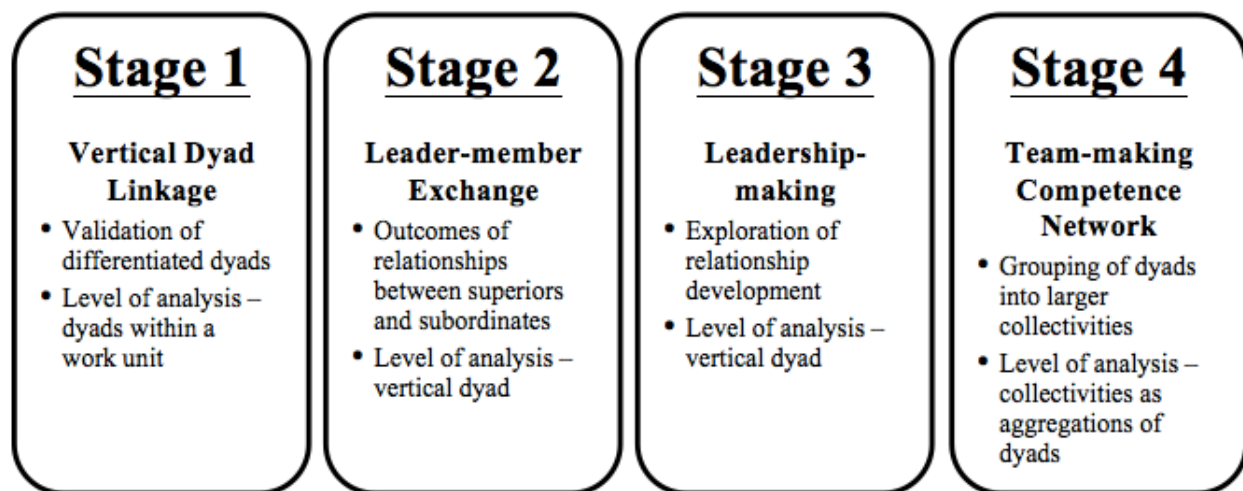


Figure 2.2. Four stages of Leader-member Exchange theory development.

In the early stages, LMX theory was referred to as vertical dyad linkage (VDL) theory (Northouse, 2010), and was introduced as an alternative to then contemporary models of leadership which were based on two assumptions: (a) that members of an organization who report to the same leader are homogenous in regard to factors such as perceptions, interpretations, and reactions, such that they may be treated as one unit, and (b) that a leader treats each subordinate in essentially the same manner (Dansereau, Graen, & Haga, 1975).

Further explanation of VDL theory provides a foundation for exploring the current theoretical perspectives.

VDL theory focused on how relationships between a leader and a subordinate form in the dyad, which provided for situations where each leader-member relationship in an organization was either unique virtually the same. According to Dansereau, Graen, and Haga (1975), the vertical dyad was “the appropriate unit of analysis for examining leadership processes because the vertical dyad reflects the processes linking member and superior” (p. 47). Essential to VDL theory was the distinction between leadership and supervision.

The characteristics of vertical interactions between superiors and subordinates allowed for distinguishing between leadership and supervision (Dansereau, Graen, & Haga, 1975). When playing the role of supervisor, superiors adhere to formal contractual descriptions and obligations during interactions with subordinates, and subordinates fulfill the prescriptions of the contract in exchange for continued employment, including submission to the superior and his corresponding positional related authority. Rather than negotiating with the subordinate, superiors acting as supervisors may “treat the member much as he would a part in a complex machine” (Dansereau, Graen, & Haga, 1975, p. 49). The role of leader, however, looks much different.

Superiors who act as leaders in vertical dyads with subordinates do not rely on the formalities of employment contracts; rather, the actions of subordinates are influenced by other means. The substitute approach in these superior-subordinate exchanges is grounded in the interpersonal relationship between the leader and the subordinate. Dansereau, Graen, and Haga (1975) held that influencing members from the source of interpersonal relationships could result in valued results for both people in the dyad, which could not be harvested when the superior employed the technique of supervision.

Dansereau, Graen, and Haga (1975) purported that, for subordinates, the leader may offer things such as freedom from narrow job restrictions, input on decisions, open communication, support, and confidence. Because of the symbiotic nature of the relationship between a superior who enacts leadership and a subordinate, there are benefits for the leader. For leaders, subordinates may offer time and energy performing job related tasks, increased commitment, and may potentially assume greater responsibility. Such leadership exchanges, while valuable, can be harmed when leaders revert to using supervision techniques, which can eventually destroy the leadership exchange, thus, negating any trust built between leaders and member (Dansereau, Graen, & Haga, 1975). While leadership exchanges can be quickly depleted, they are not as easily established.

The initial process of distinguishing the different roles played by leaders and subordinates is referred to by Dansereau, Graen, and Haga (1975) as role making, and the degree to which superiors allow subordinates to consult in job related issues determines the initial emergence of vertical exchange. “The greater the latitude initially given to the member to negotiate job-related matters, the higher is the probability that the superior is attempting leadership and the lower the probability that he is using supervision with his member” (Dansereau, Graen, & Haga, 1975, p. 50). Further explanation of the role-making model of leadership expands on the process, which introduces stage two of LMX, the leader-member exchange.

Graen (1975) described the role making process between superiors and subordinates as involving two actions: (a) navigating how each person will act in various situations, and (b) establishing relationship norms within the formal organization. The product of role making processes between supervisor and subordinate is a dyadic relationship, which aids in describing the development of relationships between leaders and members through examining the VDLs

(Graen & Cashman, 1975). Graen and Cashman (1975) held that interpersonal interactions during the role-making process could provide early detectors of the emerging dyadic structure. Two assumptions of the role-making model of leadership were: (1) some actions need to be formed early in the development of the VDL, and (2) a long period of time must be provided for the development of some relationships. In making the two assumptions, Graen and Cashman (1975) predicted that early interactions between leaders and subordinates would predict the LMX and tested this prediction to advance the theory.

The analysis of the study conducted by Graen and Cashman (1975) allowed for a theoretical interpretation. In forming new teams, leaders in the study operated in ways that fostered differentiation between members, attempting special exchanges that extended beyond the formal employment contract with only some of the members with select members. While members who accepted the special exchange eventually became part of the leaders trusted group, those who did not accept the invitation did not. Two distinct groups eventually emerged, the in-group and the out-group, pointing to the types of exchange between leaders and subordinates as the determining factor for group emersion and distinction – the leader-member exchange (Graen & Cashman, 1975).

Graen and Cashman (1975) reported the influence on members without resorting to contractual authority as leadership and influence that relied on authority derived from the contracts of employment as mere supervision. A leadership exchange, then, was grounded in the interpersonal interactions between leaders and subordinates; however, this rose question in regard to what the leader could exchange with members that was not covered in a formal contract (Graen & Cashman, 1975).

The nature of a leader's position grants him or her possession of various resources not directly accessible to his or her subordinates. These resources may include discretion in job assignments, support on the job, the mediation of consequences of a subordinate's actions, and involvement in decision-making, among others (Graen & Cashman, 1975). Leaders may choose to share these resources with subordinates, and if made attractive, the sharing of resources can serve as the leaders contribution to the LMX. In return, members contribute to the exchange.

The reciprocation of exchange from members to leaders looks somewhat different. Rather than returning the exchange with access to resources, subordinates may counter with an increase in the disbursement of time and energy spent on task performance, assume greater responsibility, or display greater commitment to organizational goals – all demonstrating a strengthening of vested interest at work (Graen & Cashman, 1975). The outcomes of an exchange must be attractive to both leaders and members for the LMX to be established (Graen & Cashman, 1975). When entering such exchanges, however, there are costs for both leaders and members.

Graen and Cashman (1975) explained that risks for entering into in-group exchanges with subordinates come with costs that might prevent some superiors from engaging with followers in such a way. For example, an in-group exchange results in the leader becoming dependent on a subordinate and also diminishes the amount of control over a member. In this regard, the member can exercise his or her capacity to make the leader appear more or less effective. For example, while a leader may delegate certain critical tasks to an in-group member, it is ultimately the leader's responsibility to ensure that the task is carried out; therefore, the leader depends on the member to be successful, because if he or she fails, so does the leader. In-group exchanges require leaders to provide support to and confidence in the member, which is

accomplished by engaging the member in organizational decisions. While suggested that leaders who engage in in-group exchanges with members work through decisions with members to gain compliance, the actions prescribed of such leaders do not prevent resorting to authority; however, resorting to authority to command certain actions may result in a decrease in the quality of the relationship and threatens to change the superior's technique from leadership to supervision (Graen & Cashman, 1975). Like leaders, members who engage in in-group relationships also experience some costs.

With the gaining of access to the leader's resources, subordinates who choose to participate in in-group exchanges with their leaders risk the assumption of more responsibility. Under the supervision technique, subordinates are only expected to perform duties specified in the employment contract. The risk of increased responsibility should come with some advantages, though, such as higher performance evaluations and greater job satisfaction (Graen & Cashman, 1975).

Explorations of the vertical dyad in this stage of LMX theory development aimed to provide further descriptions of the leadership process, forsaking the traditional path that assumed homogeneous vertical dyads. Consideration of heterogeneous vertical dyads provided an opportunity for examining leadership as a developmental process (Graen, 1975). Two key findings emerged during stage two of LMX theory development. First, "development of LMX relationships is influenced by characteristics and behaviors of leaders and members and occurs through a role-making process" (Graen & Uhl-Bien, 1995, p. 229), and second, "higher-quality LMX relationships have very positive outcomes for leaders, followers, work units, and the organization in general" (Graen & Uhl-Bien, 1995, p. 229). Stage two advanced LMX theory in that the descriptions of differentiated relationships provided in stage one were explained in terms

of development and accompanied by narratives of the consequences of different qualities of leader-member relationships (Graen & Uhl-Bien, 1995), providing focus for stage three.

Stage three of LMX theory, referred to as leadership-making, moved beyond attention to in-group and out-group relations and shifted to a focus on developing effective leadership processes through creating effective relationships (Graen & Uhl-Bien, 1995). The shift in stage three called for an examination of leadership in terms of a partnership between superiors and subordinates, suggesting that leaders initially provide all subordinates with access to LMX processes, as opposed to treating some subordinates more favorably.

There are two significant effects of making LMX available to all subordinates: (a) the process of LMX becomes more equitable, and (b) there is greater potential for the development of high quality relationships, or partnerships (Graen & Uhl-Bien, 1995). In this nature, LMX theory took on a prescriptive approach, suggesting that leaders develop relationships with subordinates through three phases (the leadership making model). The phases of the model – stranger, acquaintance, and partnership – are shown in Figure 2.3, and the goal for leaders is to progress to high-quality relationships with all followers in the partnership phase where there is mutual respect, trust, and dependency between leaders and followers (Graen & Uhl-Bien, 1991).

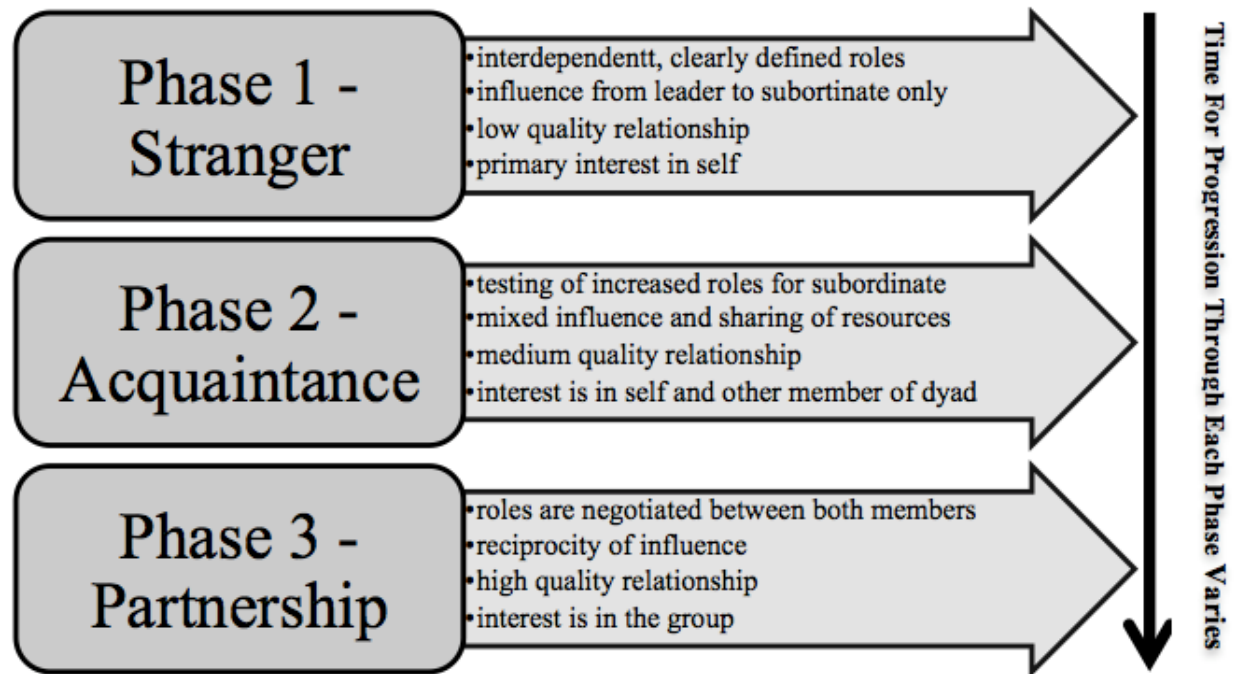


Figure 2.3. Three phases of leadership making.

In the stranger phase, superiors and subordinates come together with interdependent roles within an organization where interactions are more formal (Graen & Uhl-Bien, 1995). Put clearly, leaders support followers only with what they need to perform their jobs, and followers do only what their job requires. Following the stranger phase, enhanced working relationships must occur through an offer made by either person in the dyad, allowing dyads to move to the next stage of development – the acquaintance phase (Graen & Uhl-Bien, 1995). During the acquaintance phase, the frequency of social exchanges increases and not all of these exchanges are required aspects of the subordinate’s job – a result of the increased social exchanges is an increase of information and resource sharing (personal and work related), which are part of a testing period (Graen & Uhl-Bien, 1995). Exchanges during the acquaintance phase occur within a limited time period, during which, favors are returned equitably, and after the relationships advance to the next phase, mature partnership, the relationships between leaders and members are highly developed (Graen & Uhl-Bien, 1995). Mature partnerships are long

lasting and result in both individuals in the dyad relying on each other for loyalty and support and providing mutual respect and trust; the time required for dyadic progression through the three phases of the leadership making model varies (Graen & Uhl-Bien, 1995).

Some dyadic relationships may never advance beyond the stranger phase; this occurs when a leader rarely interacts with his subordinate, and the interactions that do occur are based on the limits of the employment contract (Graen & Uhl-Bien, 1995). Additionally, some relationships may advance to the acquaintance phase and then remain stagnant due to the increments at which leaders and members are able to engage and influence one another (Graen & Uhl-Bien, 1995). Dyadic relationships that reach this phase but fail to advance to mature partnerships frequently revert back to the stranger phase (Graen & Uhl-Bien, 1995).

Relationships that do evolve into mature partnerships provide rewards for both partners. Leaders rely on followers to provide assistance when necessary without a pay increase or may trust followers to provide honest feedback and criticism, whereas followers rely on leaders for career investment and encouragement (Graen & Uhl-Bien, 1995). The mutual trust, respect, and obligation to one another, which characterizes mature partnerships, serve as empowering and motivating factors to grow beyond formal work roles (Graen & Uhl-Bien, 1995), and result in more effective leadership outcomes (Uhl-Bien & Graen, 1993). Stage three of LMX development proposes that managers be encouraged and trained in making partnership offers to all subordinates to make the LMX process more equitable and to increase the leadership of managers (Graen & Uhl-Bien, 1995), paving the way for stage four.

Stage four of LMX theory development, proposed by Graen and Scandura (1987), expands the dyadic partnership to group levels, viewing LMX as systems of interdependent dyadic relationships and exploring how the different dyads form the leadership structure within

an organization. Graen and Uhl-Bien (1995) defined leadership structure as “the pattern of leadership relationships among individuals throughout the organization” (p. 234). Leadership structures encompass more than superior-subordinate relationships, also encompassing relationships among peers and teammates; how the structures play out is a reflection of how work gets accomplished in organizations (Graen & Uhl-Bien, 1995). Stage four of LMX aims to provide a better understanding of organizational leadership structure by investigating job task interdependencies and the quality of relationships that form due to the interdependencies, as the more effective leadership relationships will yield more efficient task completion (Graen & Uhl-Bien, 1995). The investigation of interdependencies should focus on patterns of relationship quality while considering how critical various interdependent relationships are to task completion and the effects of segregated relationships on the entire organizational structure (Graen & Uhl-Bien, 1995). In postulating stage four of LMX theory development, Graen and Uhl-Bien (1995) suggested three specific levels at which research should address.

The first level of research in stage four should occur at the workgroup level, addressing how relationships of different qualities (high or low) are aggregated in a work unit and their corresponding impact on group level outcomes (Graen & Uhl-Bien, 1995). The second level of research should occur beyond the immediate work group level, exploring the effect of an individual’s relationship quality at the work group level on relationships developed with others throughout an organization (Graen & Uhl-Bien, 1995). Finally, the third level should cross organizational boundaries and investigate how relationship patterns impact the ways in which one interacts with organizational stakeholders (Graen & Uhl-Bien, 1995). Stage four of LMX theory development expanded the theory from a narrow focus on superior-subordinate dyadic

relationships to a multilevel framework that explores multiple organizational domains (Graen & Uhl-Bien, 1995).

Empirical Literature Review of Leader-member Exchange Theory. Throughout the evolution of LMX theory, so too have LMX measures evolved, and during the development of measures, “scales have ranged from two to 25 items” (Schriesheim, Castro, & Cogliser, 1999), while investigating LMX in a plethora of settings. One setting that has received little yet notable exploration in regard to LMX is education (Bowler, 2001; Clemens, Milsom, & Cashwell, 2009; Erdogan, Kraimer, & Liden, 2004; Heck, Bedeian, & Day, 2005; Lin, 2007; Mauro, 2007; Myers, 2006; Somech & Wenderow, 2006). The following review examines empirical literature relating to LMX theory and educational settings, while demonstrating a lack of research involving student-teacher dyads and no investigations into how LMX between teachers and students impact student achievement.

LMX theory holds that high quality relationships between leaders and subordinates promote increased communication. Myers (2006) investigated whether student perceptions of relational quality with their instructor are reflected in student motives to communicate with the instructor. In this study, 139 undergraduate students completed the LMX-7 and the Student Communication Motives instrument. It was hypothesized that students who report an in-group relationship with the instructor would also report being more motivated to communicate with the instructor at higher rates than students who report an out-group relationship, and results supported this hypothesis, with a significant difference of communication motives between in-group and out-group respondents. Myers (2006) suggested that similarities between the student and instructor could promote higher quality relationships, as similarities could lead to personal

relationships, and recommended the consideration of students' perceived quality of teacher-student relationships as an explanation for why some students seem motivated to communicate with the teacher.

In another study investigating the teacher-student dyad, Bowler (2001) explored how demographic similarities between a teacher and student affected the quality of LMX and how the quality of LMX between teacher and student impacted the students' performance rating of the instructor. Using the survey results of 76 undergraduate students, Bowler (2001) concluded that demographic variables of gender, marital status, age, region where raised, ethnic background, and current employment situation did not significantly impact LMX between the student and the instructor; however, evidence did support the notion that LMX quality impacts the performance appraisal of the instructor. Specifically, there was a positive relationship between LMX quality and end-of-course rating of the teacher by students, thus supporting the notion of LMX theory that benefits for the leader exist in high quality relationships (Dansereau, Graen, & Haga, 1975).

Much of the research of LMX in an educational setting views teachers in the role of subordinate. For example, Heck, Bedeian, and Day (2005), explored how the effects of work-related antecedents on complaining are transmitted through employee beliefs about self. In this investigation, 317 teachers and their principals were surveyed. Based on the research of Sias (1996) indicating that subordinates who have a low quality relationship with their leader complain more, the researchers set out to investigate if LMX was, indeed, an antecedent of complaining, which is transmitted through organizational based self esteem (OBSE). After results showed that OBSE mediated LMX quality and complaining in the workplace, it was recommended that leaders work to improve leader-subordinate relationships to strengthen an employee's self esteem.

As LMX theory describes, low quality relationships between leaders and subordinates can be characterized by top-down leader influences and more formal interactions while high quality relationships involve a more participative leadership style (Graen & Uhl-Bien, 1995). Somech and Wenderow (2006) investigated the impact of participative leadership and directive leadership on teacher performance through the intervening effects of LMX. During the investigation, 100 teachers and their principals completed a variety of instruments, including the LMX-7, to assess leadership style and principal-teacher relationship. Results indicated that a directive leadership style was positively associated with teacher performance in those dyadic relationships that were low quality. The researchers suggested that a directive leadership style would aid in promoting the performance of teachers who report a low quality relationship with the principal because such leadership would meet the expectations of these teachers and could possibly boost performance. In consideration of the findings, Somech and Wenderow (2006) held that “leaders must have the capacity for participative and directive approaches alike and for knowing when to employ each” (p. 767).

Another study that positioned teachers in the role of subordinate was conducted by Erdogan, Kraimer, and Liden (2004). In the study of 520 teachers, the researchers tested the hypothesis that LMX would interact with the congruence of work value in relation to intrinsic career success. Results of the study demonstrated that work value congruence was positively associated with career satisfaction when LMX was low, but when LMX was high, the relationship was not significant. Based on the findings from the study, Erdogan, Kraimer, and Liden (2004) held that “high LMX members may have greater latitude in shaping their career experiences because principals have greater control over activities that shape teacher’s career satisfaction, such as accommodating teachers while they pursue advanced degrees” (p. 321).

In addition to teachers, others in the education industry, such as counselors, have played the role of subordinate for studies of the leader-member dyad. Clemens, Milsom, and Cashwell (2009) used LMX theory to examine the relationships between principals and school counselors and the roles, job satisfaction, and turnover intentions of counselors. The study showed that principal-counselor relationships had a greater effect on the internal variables of job satisfaction and turnover intentions than on the external variable of discrepancy of program implementation. The study also showed that the use of advocacy skills by school counselors was positively influenced by the quality of relationship with the principal and that stronger relationships with the principal resulted in more satisfied counselors with less of a likelihood to seek another position. The researchers suggested that counselors engage principals in shared decision making by seeking advice on how to best handle a situation, for example, to foster higher quality relationships.

In another study addressing retention of educators, Mauro (2007) set out to explore the perceptual differences of principals, general educators, and special educators regarding what constitutes a supportive and collaborative school environment. The study used surveys from 191 participants. Results suggested that teachers with a greater number of years teaching were more likely to respond in a manner similar to the perceptions of the administrator regarding professional respect.

Undoubtedly, the actions of a principal have an impact on the effectiveness of a school. Lin (2007) explored the relationship between the principal's leadership style of kindergarten and organizational effectiveness. Results of the study from 163 kindergarten teachers indicated that the relationship between kindergarten effectiveness and principal's leadership style was

moderated by LMX and teacher empowerment. Specifically, the study showed that transformational leadership more positively impacted LMX than transactional leadership.

Adaption-Innovation Theory

Set in the context of problem solving, Adaption-Innovation Theory (A-I theory) relates to the style in which people think, and, conversely, describes the differences between individual preferences for the ways in which people solve problems (Kirton, 2003). Two essential issues are stressed in A-I theory: (a) when problem solving, people are limited by the way they are built, but have no instinct to help or hinder them, and (b) everyone is creative at different levels and styles, meaning that everyone is capable of problem solving, providing that motive and opportunity exist (Kirton, 2003). The second issue introduced is the foundational assumption of A-I theory – everyone solves problems and is creative at different levels and styles.

Distinguishing A-I theory from other fields of study related to problem solving is that A-I theory is concerned only with how people solve problems, or, style, holding that one's preferred style is either more adaptive or more innovative. Characteristics often associated with problem solving, including potential capacity for intelligence or talent and learned levels (such as competence), are independent of style, meaning that innovators and adaptors are found at all levels. A more clear definition of style allows for better understanding of A-I theory and introduces the labels of adaptor and innovator.

Thinking style is synonymous with cognitive style and references the different manners in which people approach solving similar problems. The operational definition of cognitive style in A-I theory is “the strategic, stable characteristic – the preferred way in which people respond to and seek to bring about change” (Kirton, 2003, p. 43). A-I theory holds that style is set at an

early age and is stable throughout one's life. All people have a preferred cognitive style which impacts behavior, but this style is not related to problem solving ability or capacity; however, there is an inclination for attributing style differences to level differences – an erroneous belief since the two are independent. In fact, A-I research continually demonstrates that innovation is not correlated with level. Style deals with the manner in which people approach problems, whereas level deals with how much one is capable of solving problems. Not surprisingly, confusion exists about the value of innovation over adaption, with some assuming that only those who are innovative can bring about change. The position that those who are innovative are more suited to be agents of change is exclusive and incorrect, as A-I theory explains. The value of style and level being independent is that “innovation is intrinsically no better than adaption” (Kirton, 2003, p. 157).

According to Kirton's (2003) A-I theory, everyone solves problems in accordance with individually preferred styles, problem solving brings about change, and, therefore, everyone is a change agent. In regard to preferred style, A-I theory describes style as a range from high adaption to high innovation and holds that all people lie somewhere on a normally distributed style continuum. The terms “more adaptive” and “more innovative” are preferred over “adaptors” and “innovators” because this distinction more clearly describes a continuous range of style rather than two types. The more adaptive prefer structure with consensual agreement while the more innovative prefer less structure and are not as concerned with consensual agreement. Delineating the more adaptive style and the more innovative style addresses the role and value of each.

As Kirton (2003) explained, the way people prefer to deal with cognitive structure is significant to the differences between adaptive and innovative tendencies, and the characteristics

of these tendencies manifest in the way people define problems, generate solutions, create policies, and work in organizations. The more adaptive accept problems with agreed upon constraints and resolve problems quickly, which increases efficiency, while the more innovative prefer to redefine problems rather than accept them “as is” and consider long-term gains rather than immediate efficiency, which means they may take more time to solve problems. Once problems are defined, the more adaptive produce few new solutions that are relatively easy to implement but provide a way of improving the way things are done. The more innovative, on the other hand, tend to generate numerous ideas that may not even seem relevant to the problem and lead to doing things completely different rather than doing things better. In creating organizational structure and writing policy, the more adaptive like to integrate new information with existing policies with the goal of improved efficiency; however, the more innovative approach is to create new policy with disregard for current structure. Organizationally, the more adaptive are necessary for the continuation of constant institutional functions and experience difficulty when asked to transition from an established role, while the more innovative emerge as critical players in an organization during times of crisis and change, but may find difficulty with continuous organizational functions. Naturally, differences in cognitive style impact the working relationships of individuals in collaborative settings and, consequently, each tends to perceive the behavior of others in specific ways. The more innovative frequently view the more adaptive as conforming to structural norms, safe, predictable, and inflexible, whereas the more adaptive see the more innovative as being unsound, impractical, risky, and threatening to established structure. As mentioned, a propensity for associating the more innovative with creativity exists, but as Kirton (2003) clarified, everyone is creative within his or her own style, and both problem solving and creativity are results of the same brain function.

That problem solving is a function of the brain means that adaption-innovation cognitive style lies within the field of cognitive function (Kirton, 2003). Kirton (2003) explained that problem solving is necessary for survival, which requires people to be creative to a degree; however, distinction between what is and is not creative varies from one person to another. The channeling of creative thought is imperative to problem solving and A-I theory relates evenly to both, though creative thought and problem solving capacity are not stable. Cognitive style, however, is the stable characteristic by which individuals react to and create change (Kirton, 2003).

In consideration of the previously given operational definition of cognitive style, “the strategic, stable characteristic – the preferred way in which people respond to and seek to bring about change” (Kirton, 2003, p. 43), examining prominent terms further explains cognitive style. Prominent terms in the definition include preferred, style, stable, and change. In using the term *preferred*, Kirton (2003) communicated a clear difference between style and behavior, whereas the preferred style influences one’s behavior. The key difference between preferred style and behavior is flexibility; research submits that cognitive style has an early onset and is very resistant to change, whereas behavior is highly flexible. Kirton (2003) used the term *style* to distinguish between how one approaches problems and one’s capacity for solving problems. Style references manner while capacity references how much. The term *stable* is essential to understanding A-I theory and cognitive style, as the theory suggests that cognitive style, as previously indicated, is highly inflexible. Research shows that factors such as age, experience, and culture do not impact cognitive style (Kirton, 2003); it has even been suggested by Van der Molen (1994) that cognitive style is inherited. Lastly, the term *change* is important to cognitive style because the theory holds that change is constant. As people continuously bring about and

respond to change, change is an essential component of cognitive style and is quintessential to the notion championed by A-I theory that all people are agents of change (Kirton, 2003). Understanding cognitive style is important when comparing people who interact with one another.

A-I theory does not intend to compare people to a general population mean because relation to a general population does not provide valuable insight; however, comparisons of cognitive style between individuals can be enlightening. A person can always be compared to someone else as being more or less adaptive, or, more or less innovative (Kirton, 2003). For example, two individuals who collaborate may both exhibit a cognitive style indicative of innovators. In such a dyad, though, one of the two individuals will be more innovative and, likewise, one of the two individuals will be more adaptive. Similarly, in the example given, the person who is more adaptive in this case could be more innovative when compared to someone else. Considering how comparisons work in A-I theory, then, one could presumably be perceived as more adaptive, for example, at work and more innovative at home, or vice versa. Because perceptions of being more or less adaptive or innovative are contextual, there are trait characteristics frequently associated with each cognitive style.

Kirton (2003) explained how adaptors and innovators view each other and compares the attributes and behaviors associated with each, including how persons preferring each style define problems, generate solutions, form policy, and perform in organizations. According to Kirton (2003), adaptors view innovators as being exciting, impractical, risky, abrasive, and a threat to established systems, whereas innovators view adaptors as conforming, predictable, inflexible, and intolerant of ambiguity. In regard to defining problems, adaptors exhibit a tendency for accepting problems as consensually defined with agreed upon constraints and limit disruptions in

attempt to resolve problems quickly and increase efficiency (Kirton, 2003). Innovators, on the other hand, prefer redefining problems and reject consensual perceptions, displaying less need for efficiency and focus on potential long-term gains (Kirton, 2003). Where generating solutions is concerned, adaptors tend to create a small number of novel and relevant possible solutions that promise to do things better, with confidence that effective implementation is possible regardless of size and complexity (Kirton, 2003). Innovators generate numerous novel ideas that may or may not appear to be relevant or acceptable to others – rather than doing things better, the ideas produced by innovators often mean doing things differently (Kirton, 2003). In regard to policy formation, adaptors prefer established structure and are comfortable incorporating new information, activities, or events into existing structures and policies that result in improved efficiency (Kirton, 2003). In contrast, though, innovators prefer to not operate within the confines of structure and view new information as an opportunity to create new structures or policies that challenge the current paradigm (Kirton, 2003). Finally, in regard to organizational management, adaptors are necessary for managing existing systems but find difficulty when unexpected changes and directions cause a regrouping of established roles (Kirton, 2003). Times of radical change in organizations or crisis situations provide an opportunity for innovators to excel; however, innovators do not easily apply themselves to change management within existing organizational structure (Kirton, 2003). According to Kirton (2003), much of the descriptors associated with adaptors and innovators are frequently associated with personality traits in people, which is plausible given the power of cognitive style on behavior. Furthermore, the range of adaption-innovation is necessary for solving the diversity of problems that arise for individuals and groups, adding value to a diversity amongst cognitive styles on a team (Kirton, 2003), though managing such diversity is not easy.

The measure associated with A-I theory is the Kirton Adaption-Innovation Inventory (KAI), which measures people on their preferred style of problem solving and creativity (cognitive style). While the technical areas of measurement and the significance of KAI distributions will be discussed at length in Chapter 3, a general description of how scores on the KAI impact individuals working in teams highlights the difficulty associated with managing diversity of style previously mentioned. The theoretical range of scores on the KAI is 32 to 160 with a theoretical mean score of 96. Lower scores on the KAI indicate an adaptive style while higher scores indicate an innovative style; however, when respondent receive scores, they are not boxed in, preventing people from being labeled as adaptor or innovator (Kirton, 2003). While people may be interested in how their scores on the KAI compare to a general population, the interest is temporary, as the scores truly become valuable to people when they can make comparisons between themselves and others they know (Kirton, 2003). In large groups, small groups, and even dyadic relationships, KAI score is relevant because a small variance between the scores of two people will yield a noticeable difference. A-I literature refers to difference in scores as cognitive gap and gives perspective to various gaps – “people having scores less than 10 apart are regarded as having ‘same’ score, between 10 and 19 as ‘similar’ scores and 20 or more apart as having ‘different’ scores” (Kirton, 2003, p. 67). According to Kirton (2003), it is very unlikely that less than 10 points difference in scores will be noticed; however, over time, 10 points difference or more will certainly be noticed. A cognitive gap of 20 points between two people is very noticeable and can potentially lead to communication breakdowns if not managed, and a gap of 30 to 40 points requires constant monitoring to prevent friction and circumvent misunderstanding between people (Kirton, 2003). Because cognitive gaps are uncomfortable, people frequently attempt to mediate such gaps with coping behavior.

Cognitive style does not equate behavior, rather, style impacts behavior. People have a preferred style for solving problems, but problems cannot be solved using preferred style; everyone has the ability to use a non-preferred style by enacting coping behavior. Coping behavior, then, is defined as “behaving (problem solving) outside one’s preferred style by the minimum amount for the least time” (Kirton, 2003, p. 254). Coping behavior is intentional in response to certain problem solving situations that one judges unsolvable lest the behavior is induced (Kirton, 2003). Coping behavior is measured by duration and intensity – the farther the distance from one’s preferred style and the length required of coping behavior (duration), the more difficult putting forth required effort for coping behavior becomes (intensity) (Kirton, 2003). Though uncomfortable, everyone must partake in coping behavior from time to time, given the limited range of style within which people are comfortable and the extensive range of style required to solve an assortment of diverse problems (Kirton, 2003). The driving force behind coping behavior is motive; if motive does not exist, coping behavior will not be enacted (Kirton, 2003). When motive is present, the drive to use coping behavior will continue until the problem is solved or it becomes possible to use one’s preferred style; however, Kirton (2003) explained that coping behavior costs effort, and if the amount of effort costs more than an individual is willing to pay, motive ceases as does coping behavior. Considering that behavior is impacted by cognitive style and that people frequently must use coping behavior, “actual behaviour, then, is a blend of behaving in one’s preferred style and coping behaviour” (Kirton, 2003, p. 254).

Empirical Studies of Adaption-Innovation Theory. Initial validation of the KAI was based on six population samples totaling nearly 3,000 individuals (Kirton, 2003). Since then,

numerous studies have been grounded in A-I theory and employed the KAI as a measurement instrument to explore a variety of topics, including education (Brinkman, 1994, 1999; Jablowski, Vercellone-Smith, & Richmond, 2009; Kirton, Bailey, & Glendinning, 1992; Puccio, Talbot, & Joniak, 1993; Selby, 1992; Selby & Treffinger, 1993; Selby, Treffinger, Isaksen, & Powers, 1993; Taylor, 1993, 1994). Though the KAI was intended to measure the cognitive style of adults with work experience, investigations using younger subjects demonstrated that people at 13 years of age or older could handle the instrument (Kirton, 2003). The review that follows highlights empirical research involving cognitive styles in educational settings.

In a study regarding educational procedure, Kirton, Bailey, and Glendinning (1991) tested the hypothesis that “differences in attitudes toward conflicting procedures would depend on the context of the presentation and an individual’s cognitive style” (p. 445). In this study, 182 secondary level teachers completed the KAI and two additional questionnaires regarding either academically or socially oriented issues in the context of streaming, which is the practice of assigning students to classes based on ability rather than randomly grouping students, which results in mixed abilities in a classroom. The organizational implications of streaming tend to include a reduction in interdepartmental communication, an inclination toward traditional teaching methods, and structured, clear goals regarding examinations. Teachers with a more adaptive style showed preference for the organizational procedures associated with streaming, including tighter structure, clearly defined aims, and defined assessment methods. While innovators did support streaming, they had more preference for looser structure, unclear goals, and more vague assessment methods.

The stability of the KAI when used with school age youth has been questioned, as the instrument was intended for an adult audience with work experience. Taylor (1994) conducted a

longitudinal study of the KAI to test the stability of the cognitive style of school children. In the study, 45 youth, all age 14, completed the KAI yielding a mean score of 97.71 and a Cronbach's alpha reliability coefficient of .81, a respectable level of reliability. Three year's later, the students, then 17 years old, again completed the inventory exhibiting a mean score of 97.93, a Cronbach's alpha reliability coefficient of .88, and a Pearson test-retest correlation of .67 ($p < .001$). The study demonstrated the possibility of using the KAI with young people and Taylor (1994) suggested the lower reliability in round one of the study being a result of limited vocabulary, as questions about the meaning of words did not arise during round two.

The ability of the KAI to reliably identify the behavior of eighth grade students on the adaption-innovation continuum was studied by Selby, Treffinger, Isaksen, and Powers (1993). Additionally, the researchers investigated the ability of parents and teachers to describe student behavior in agreement with the KAI. For this study, 86 American eighth grade students completed the KAI. Also, parents and teachers were asked to complete the KAI from the viewpoint of how they felt others might view the student. Findings supported the notion that the KAI is reliable, stable, and valid for use with American eighth grade students. Parents were able to successfully use the KAI to describe the behavior of their children; however, teacher scores did not consistently agree with student scores, suggesting that classroom behavior may not always reflect cognitive style. In this study, adults generally viewed students as being more adaptive than students reported, suggesting that teachers may place stress on students in ways unrelated to academics (Selby, Treffinger, Isaksen, & Powers, 1993).

Adaption-innovation theory holds that style is independent of level (Kirton, 2003); the KAI is the supported measure of style proposed by the theory. Brinkman (1999) called this notion into question in a study of the musical compositions of high school musicians, predicting

“that subjects with an adaptor creativity style will be more creative with a closed problem, while subjects with an innovator creativity style will be more creative with an open problem” (p. 63). In this study, 32 high school band students (16 demonstrating a strong innovative style and 16 demonstrating strong adaptive style according to the KAI) were selected to complete the study. Two problems were constructed for each student to accomplish, one being ill defined and the other being more defined. The ill defined task demonstrated an open problem asking students to simply compose a melody, while the more defined task presented a closed problem asking students to “compose a melody that uses mostly white keys on the keyboard, is in 3/4 time, is energetic, and is approximately 12 to 20 measures long” (Brinkman, 1999, p. 63). Brinkman (1999) reported no significant differences between problem type, style, or the interaction of type and style, thus supporting Kirton’s (1976) claim that A-I theory describes style and that both adaptors and innovators are creative.

A-I theory has also been used to examine student engagement. Friedel and Rudd (2009) aimed to “examine the dissimilarity of cognitive-style gap between instructors and students and its relationship with student engagement” (p. 22). In this study, 511 undergraduate students and nine instructors completed the KAI and the National Survey of Student Engagement (NSSE). Results of the study showed that cognitive gap between students and instructors had little to no effect on student engagement; however, a difference in style between teachers and students could impact other factors in the classroom such as student motivation to communicate with the teacher or adhere to assignment structures. These components impact the classroom environment, which has been investigated in regard to cognitive style as well.

Person-environment (P-E) fit refers to the field of study concerned with the effects on human behavior from the interaction of the person and the environment in which he works

(Puccio, Talbot, & Joniak, 1993). According to Puccio, Talbot, and Joniak (1993), an interest of P-E researchers has been student satisfaction, well-being, and stress, and as such, the researchers investigated the relationship between P-E fit and stress of 134 university students. The purpose of the study was to measure “fit between students’ cognitive styles and environmental demands of their course in terms of Kirton’s adaptor-innovator continuum” (Puccio, Talbot, & Joniak, 1993, p. 460). In the study, researchers modified the KAI to gauge students’ perceptions of the A-I style required by the course in which they were enrolled, the styles they (the students) exhibited in the course, and their style preference. Results of the study showed that a course requiring adaptive behavior was more stressful than a course requiring innovative behavior, and a greater degree of required conformity in the class increased stress. In light of these findings, Puccio, Talbot, and Joniak (1993) warned that messages communicating a desire for students to adopt certain types of behavior cause students to feel stress. Additionally, the researchers cautioned that the interaction of student preferences and student perceptions of class demands could cause stress, even when the teacher did not communicate strong environmental demands.

Important to A-I theory is the notion that everyone is creative and solves problems; however, some industries are frequently associated with one preferred style or another. For example, a misperception of engineers exists, frequently portraying those in the engineering field as being very structured, which would indicate a more adaptive style (Jablokow, Vercellone-Smith, & Richmond, 2009). In an effort to test the misperception and explore the cognitive styles of students in various degree programs, Jablokow, Vercellone-Smith, and Richmond (2009) administered the KAI to 363 undergraduate students spanning four different majors of study. The range of scores from students was 90 points, pointing to an abundance of cognitive diversity amongst engineering students and students in other programs of study, thus

demonstrating that engineers are creative solve problems using different styles. According to Jablokow, Vercellone-Smith, and Richmond (2009), it is highly unlikely that a teacher's cognitive style will match more than a few students in a given class. Furthermore, attempting to match course materials and instructional delivery to every student in a class would be logistically challenging and is not feasible (Jablokow, Vercellone-Smith, & Richmond, 2009). Additionally, as coping behavior is learned (Kirtan, 2003), learning from a teacher whose style is different could facilitate coping behavior and enhance the problem solving of students (Jablokow, Vercellone-Smith, & Richmond, 2009). The researchers encouraged the acknowledgement, acceptance, and valuing of cognitive diversity in the classroom by teachers and students, and cautioned educators against interpreting a difference in style as a difference in level, which could be detrimental to student success. Jablokow, Vercellone-Smith, and Richmond (2009) recommend that teachers develop course materials with a degree of structure that will aid adaptive students in the classroom but leave flexibility for innovative students to disregard the provided structure and still be successful and vary assignments such that some appeal to the more innovative while others appeal to the more adaptive.

Another industry commonly associated with a particular cognitive style is accounting, where previous studies (Gul, 1986; Sweeney & Wolk, 1994, Wolk & Cates, 1994) have found a significantly greater proportion of accounting students to be adaptive rather than innovative. Wolk, Schmidt, & Sweeney (1997) aimed to test the cognitive styles of accounting educators and determine whether the pedagogical perceptions and preferences of accounting educators would be consistent with KAI scores. Additionally, the researches predicted that the KAI scores of accounting educators would be positively associated with the frequency of usage of different teaching methods. From the participating sample of 82 accounting educators, more individuals

were adaptive and style was associated with teaching methods. Given the varying cognitive styles of students, the researchers cautioned instructors from limiting delivery of course content to teaching methods they were most comfortable with because coursework appeal for students could be limited. Varying course content to match multiple cognitive styles could make courses more appealing to students.

As pointed out by Skinner and Drake (2003), the characteristic of adaptors bear strong similarity to the characteristics of those individuals who demonstrate a high need for achievement. As such, the researchers investigated the impact of cognitive style on student achievement, predicting that adaptors would earn higher course grades and would also score higher on need for achievement. In the study, 56 undergraduate students completed the KAI and Achievement Motivation Inventory in addition to completing a multiple-choice test as a measure of student achievement. While there was no significant relationship between adaption-innovation, need for achievement, and academic performance, adaptors did score significantly higher on the multiple-choice test. Skinner and Drake (2003) recommended that college students select classes where the format of content being delivered and assessment style match their cognitive style.

Summary

Chapter two examined leadership theory, learning theory, teacher impact on student motivation, theoretical and empirical research for LMX theory, and theoretical and empirical research for A-I theory. While LMX theory and A-I theory have been extensively researched in the context of organizational leadership and psychology, research in an educational context is limited.

The relationships between teachers and students can be described through the lens of leadership. Specifically, the propositions for LMX theory in education are worthy of attention through empirical study. The idea that teachers are leaders is supported throughout many theories of leadership.

Learning theory includes multiple paradigms; however, a common theme throughout learning theories is motivation. The three most well known learning theories are behaviorism, cognitivism, and constructivism. Behaviorism emphasizes extrinsic motivation, cognitivism addresses ways in which learners process information, and constructivism speaks to the ways in which learners make meaning of the things they encounter.

LMX theory holds that dyadic relationships between leaders and their subordinates develop over time, are negotiated between both individuals in the dyad, and the quality of relationships between a leader and his or her subordinates will vary. The quality of relationships can range from low to high. Low quality leader-member relationships operate under a top-down influence from the leader, provide restricted support for the subordinate, and the interactions are more formal and based on contractual agreements. High quality relationships between leaders and subordinates involve negotiations and are described as demonstrating mutual respect, support, trust, influence, and input in decision making. Leaders should strive to develop high quality relationships with all subordinates.

Adaption-innovation theory describes the differences between individual preferences for solving problems. The foundational assumption of A-I theory is that everyone solves problems and is creative at different levels and styles. A-I theory is concerned only with how people solve problems, referred to as cognitive style, and holds that one's preferred style is either more adaptive or more innovative. The more adaptive prefer structure with consensual agreement,

while the more innovative prefer less structure and are not as concerned with consensual agreement.

Both LMX theory and A-I theory have promise for research in education. Previous research has demonstrated the practical use of the theories in education; however, no research has investigated the implications for either theory in regard to student achievement, in spite of recommendations. Such a gap creates an opportunity for exploring how teacher-student relationships and cognitive styles may impact student achievement. The present study seeks to explore the numerous ways in which applying LMX and A-I theory to educational contexts and environments can improve leadership in education.

Chapter 3

Introduction

Thus far, chapter one has provided a background of the present study, demonstrated a need for the study in the problem statement, addressed the professional significance of the study and provided a description of the researcher's personal definition of leadership. Additionally, the conceptual framework developed by the researcher aided in explaining how concepts of LMX theory and adaption-innovation theory are related in relation to teacher-student relationships and student achievement. In chapter two, a review of literature on leadership, learning theory, LMX theory, and adaption-innovation theory was provided. Chapter three will introduce the research design of the present study and describe the context of the study, participants in the study, instrumentation that was used, and how data was collected and analyzed.

Research Design

The purpose of the present study is to explain how teacher-student relationships impact student achievement. The present study is an embedded sequential explanatory case study with a quantitative→qualitative two-strand design of inquiry. The first strand of inquiry uses a quantitative approach to explore the relationship between perceived quality of teacher-student relationships, cognitive style, and student achievement. The second strand of inquiry qualitatively investigates how teachers and students describe their dyadic relationships.

The Mixed Methods Design

As explained by Greene (2007), “the overall broad purpose for mixing methods in social inquiry is to develop a better understanding of the phenomena being studied” (p. 98). Greene (2007) held that mixing methods produces a better understanding than using only a single-method approach, either quantitative or qualitative inquiry, solely. For example, Mosley and Broyles (in press) used a mixed methods approach to explore the usage of guided group discussion as a method for teaching controversial issues that would eliminate teacher bias during instruction. In their study, they used a quantitative instrument to measure student perceptions about a controversial issue prior to teaching about the issue through guided group discussion. Upon completion of the group discussion, the researchers again assessed student perceptions about the controversial issue to determine the degree to which conceptual change occurred as a result of the discussion and to demonstrate that conceptual change was a result of student engagement in the discussion and not teacher bias. The researchers also asked participants in the study to respond to open-ended questions as a means of qualitatively assessing student perceptions of the teaching strategy, which allowed the researchers to gain a better understanding of the effectiveness of guided group discussion as a teaching strategy and substantiated the overall results of the study. In the present study, under investigation are the phenomenon of teacher-student relationships and the corresponding impact of such relationships on student achievement. The following is a rationale for why the researcher chose a mixed methods design and a description of the design used in the present study.

Rationale for mixed methods design. While some researchers use mixed methods approaches to gain better understanding of phenomenon, Greene (2007) presented five discrete purposes for mixing methods: (a) triangulation, (b) complementarity, (c) development, (d)

initiation, and (e) expansion. The mixed methods design of the present study was chosen for the purpose of complementarity. With the purpose of complementarity, a mixed methods approach “seeks broader, deeper, and more comprehensive social understandings by using methods that tap into different facets or dimensions of the same complex phenomenon” (Greene, 2007, p. 101). In such a study, results obtained from each method, quantitative and qualitative, should elaborate and enhance the overall interpretations of and inferences drawn from the study (Greene, 2007). Because the phenomenon of teacher-student relationships is complex and multifaceted, a complementarity purpose is fitting (Greene, 2007).

In the present study, the researcher assessed the perceived quality of dyadic relationships between teachers and students from both teacher and student perspectives, using surveys and interviews. Having data on how both teachers and students perceive and experience the phenomenon provided a more complete understanding of how teacher-student relationships develop and impact student achievement. Performing only one type of inquiry would not yield such comprehensive results. For example, applying only a quantitative strand to the present study would have limited the researcher to making inferences based on causal effects, addressing whether one variable being studied impacted another variable. This limitation would prevent inferences related to causal mechanisms, addressing how one variable being studied impacted another variable. By mixing methods, “researchers can address both causal effects and causal mechanisms questions simultaneously” (Teddlie & Tashakkori, 2009, p. 129).

According to Greene (2007), the patterns of results from a complementary mixed methods purpose may converge, as in the purpose of triangulation. Though not intended with the present study, such a pattern of results is not problematic and does not violate the intentions of a

complementarity purpose (Greene, 2007). In fact, convergence of results enhances the validity and credibility of the researcher's inferences (Greene, 2007).

Description of the mixed methods design. The present study employed an embedded sequential explanatory case study with a quantitative→qualitative two-strand design of inquiry. Important to the design is the strategy used—a case study in the present example—the family of mixed method design, and the strands of research. Each of these components of the study is discussed in greater length in the paragraphs that follow.

According to Stake (2000), case studies do not fall into a genre of research; rather, they are considered a strategy. Adelman, Jenkins, and Kemmis (1976) explained that case studies are detailed explorations of single events, processes, organizations, groups, or individuals selected from a larger entity of similar phenomena. The purpose of case studies is to gain an understanding of the greater phenomena by closely examining a specific case, and they are valued for the rich descriptions they provide (Rossman & Rallis, 2003). Yin (1994) explained that case studies are either descriptive or explanatory in nature, and Merriam (1998) held that case studies are a “good design for practical problems – for questions, situations, or puzzling occurrences arising from every day practice” (p. 11). Rossman and Rallis (2003) asserted that case studies are not intended solely for qualitative methods, explaining that a variety of techniques for gathering data are essential to the case study strategy, including the use of questionnaires, records, and interviews, among other procedures. Because case studies depend on context, what is learned from a case study cannot be generalized because of the logic of probabilities, which concludes that no two cases are identical (Rossman & Rallis, 2003); however, Kennedy (1979) called attention to another logic: reasoning by analogy. This logic

allows for extrapolation, where lessons learned from one case can be applied to another situation thought to be appropriately similar to the study sample (Kennedy, 1979). Therefore, “one case study may, by analogy, shed light on, offer insights about, similar cases” (Rossman & Rallis, 2003, p. 105). Yin (1994) stressed the importance of distinguishing between the two types of case studies: holistic or embedded. Scholz and Tietje (2002) explained that holistic case studies are “shaped by a thoroughly qualitative approach that relies on narrative, phenomenological descriptions” (p. 9), whereas embedded case studies “involve more than one unit, or object, of analysis and usually are not limited to qualitative analysis alone” (p. 9). The present research design is described as an embedded case study that is explanatory in type, where the main units of analysis are individual career and technical education (CTE) teachers and students within the CTE department of a high school, and data analysis will be both quantitative and qualitative in nature. As demonstrated by Pienaar, Nieman, & Kamper (2011), the case study strategy is appropriate when research is situated in specific school and targets specific learners, as is the case in the present study.

Multi-strand designs of mixed methods studies can be categorized into one of five families: (a) parallel; (b) sequential; (c) conversion; (d) multilevel; or (e) fully integrated (Teddlie & Tashakkori, 2009). The present study is best categorized as a sequential study. In sequential mixed designs, at least two strands of research occur chronologically, where conclusions from the first strand inform design components of the next strand (Teddlie & Tashakkori, 2009). As Tashakkori and Teddlie (2003) explained, the second strand of study may confirm or disconfirm conclusions of the first strand or may yield additional information to substantiate inferences from the first strand. Final inferences from sequential studies are “based on the results of both strands of the study” (Teddlie & Tashakkori, 2009, p. 153). Creswell,

Plano Clark, Gutmann, and Hanson (2003) described three types of sequential mixed methods designs: (a) explanatory; (b) exploratory; and (c) transformative. The present sequential study is explanatory. As described by Creswell et al. (2003), sequential explanatory designs involve the “collection and analysis of quantitative data followed by the collection and analysis of qualitative data. Priority is typically given to the quantitative data, and the two methods are integrated during the interpretation phase of the study” (p. 223). Also, in regard to the various types of mixed method designs, Teddlie and Tashakkori (2009) held that sequential designs “are less complicated to conduct by the solo investigator,” (p. 153) adding further support for the selection of the current design.

As indicated by Teddlie and Tashakkori (2009), sequential mixed methods studies are designed such that at least two strands of research occur chronologically, either quantitative→qualitative or qualitative→quantitative. The present study will be conducted in a quantitative→qualitative strand sequence, because the quantitative data are collected first and the qualitative data are collected second. Inferences from the quantitative strand will lead to the formulation of interview questions that will be used in the qualitative strand of research. As explained by Ivankova, Creswell, and Sticks (2006), multi-strand designs of mixed methods studies can be difficult to comprehend and, therefore, should be accompanied by a visual model to graphically represent “the sequence of the data collection, the priority of either method, and the connecting and mixing points of the two approaches within a study” (p. 18). Figure 3.1 presents a visual model of the embedded sequential explanatory case study with a quantitative→qualitative two-strand design used in the present study.

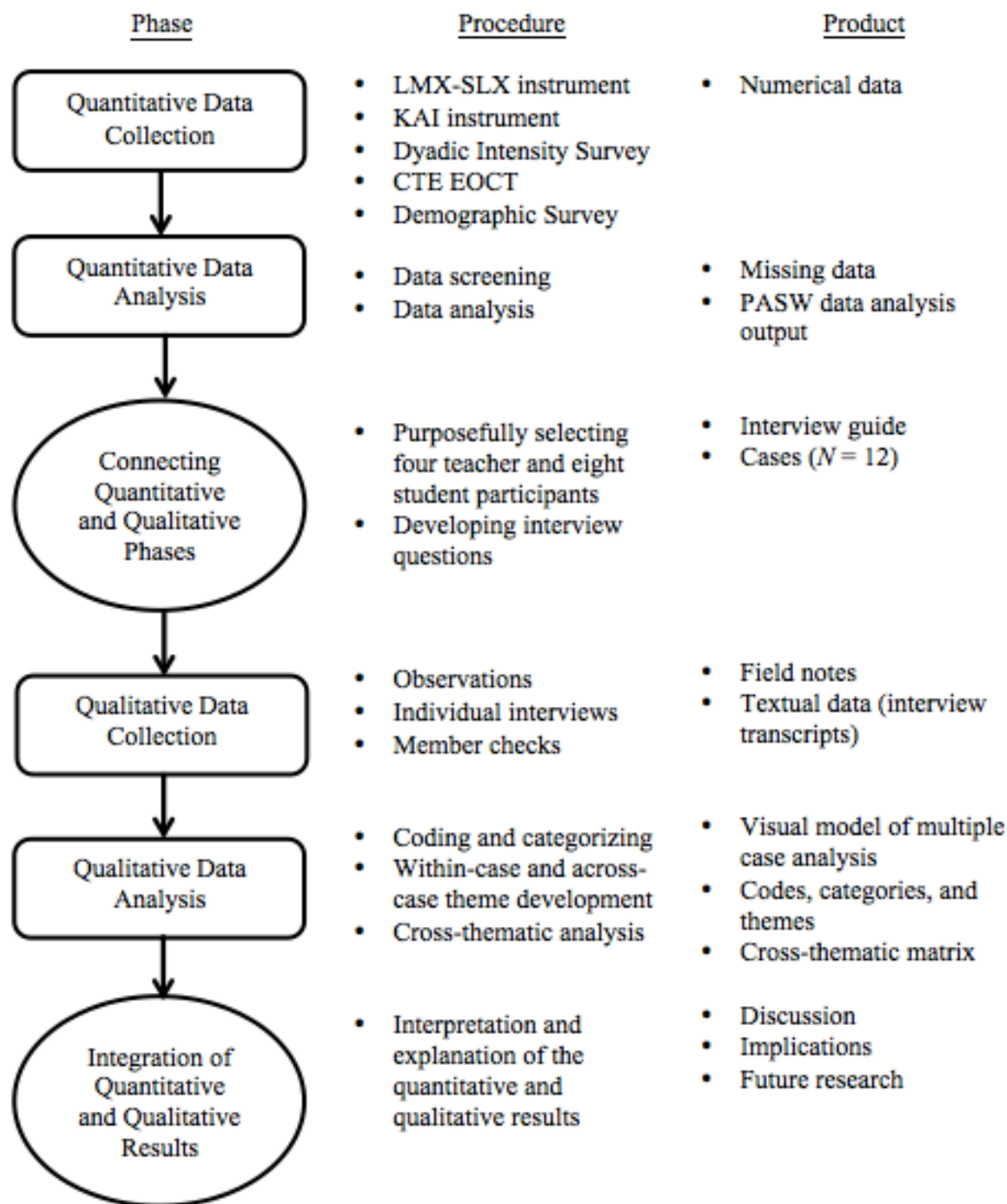


Figure 3.1. Visual model of embedded sequential explanatory case study with quantitative→ qualitative two-strand design used in the present study (Ivankova, Creswell, & Sticks, 2006)

Context and Access

This study took place in the Career and Technical Education (CTE) department of a suburban high school in western North Carolina during the months of November and December 2011. The high school has a population of just over 800 students who learn in forty-four classrooms and five CTE laboratories spread throughout the school.

Quantitative Strand

The first strand of this embedded sequential explanatory case study with a quantitative→qualitative two-strand design of inquiry is quantitative in nature. The purpose of the quantitative strand is to explore the relationship between perceived quality of teacher-student relationships, cognitive style, and student achievement.

Population and sample. The population for the quantitative strand of research was comprised of CTE teachers ($N = 11$) and their students ($N = 210$) in classes that each teacher identified for participation. As the census sampling method was used, the quantitative participant sample represented six CTE disciplines: (a) agriculture, (b) business and information technology, (c) family and consumer sciences, (d) health occupations, (e) marketing, and (f) trade and industrial education. The selection of the school used for the case study was motivated by: (a) quantity of CTE teachers in the school, (b) geographic proximity of the school to the researcher's residence, (c) the suitability of the school for the present study, and (d) the willingness of the school to grant access to teachers and students. Selecting the population for the present study in the way described represents two major sampling schemes of mixed methods research: critical case and maximum variation. Onwuegbuzie and Collins (2007) explained that

critical case sampling involves the selection of a sampling and group because their inclusion provides insight into the phenomenon of interest. Maximum variation references the selection of individuals to maximize the range of perspectives. Additionally, the population selected in the present study represents criterion sampling. The researcher determined that the criterion for the population was that a standardized academic testing measure be in existence to represent the dependent variable in the present study, student achievement, in order to relieve teacher bias from the student assessment. The selected population meets this criterion, as students enrolled in CTE courses in North Carolina must complete a state-created end-of-course exam (EOC), a criterion-referenced test used to measure CTE student achievement, at the conclusion of each course.

The present study utilized the census sampling method. Lodico, Spaulding, and Voegtle (2006) explained that in census sampling, the researcher surveys all known members of an identified population. As the present study investigates dyadic relationships between teachers and students, it was necessary to employ the census sampling method to feasibly complete the quantitative strand. Cooper and Schindler (2003) indicated that a census study is fitting when determined to be necessary for successful execution of the investigation.

Pilot testing. The instruments used in the quantitative strand were pilot tested in the fall semester of 2011 with 19 CTE students completing the Leader-member Exchange 10 item scale (LMX-SLX), two CTE teachers completing the LMX-SLX, 16 students completing the Kirton Adaption-Innovation Inventory (KAI), two CTE teachers completing the KAI, 16 students completing the demographic survey, and two CTE teachers completing the demographic survey. The completed LMX-SLX instruments resulted in 12 dyadic measures of LMX quality where

both the teacher and student completed the LMX-SLX as referent. The completed KAI instruments resulted in 16 dyadic measures of cognitive style where both the teacher and student completed the KAI and cognitive gap was calculated. The pilot study was conducted in a school located in a southeastern state. According to Woken (2010), conducting a pilot study allows a researcher to identify potential procedural challenges prior to carrying out the full study, thus resulting in greater efficiency and quality in the final study. Where data collection methods are concerned, the pilot study provides an opportunity to test the utility of data collection instruments and informs the data collection methods.

In the pilot test, the LMX-SLX, KAI, and demographic survey were tested for clarity, readability, and ease of administration. The researcher was concerned with reliability coefficients as caution has been expressed when using the KAI with adolescents, and no studies have employed the LMX-SLX with an adolescent audience. The reliability obtained during pilot testing provided confidence in using the instruments with a larger sample. Results of pilot testing were not published, but participant feedback was used to modify the demographic survey and informed the researcher of more efficient test administration.

Instrumentation. This study used four instruments to gather information that in turn was used to answer quantitative research questions: (a) the Kirton Adaption-Innovation Inventory (KAI) (Appendix A), (b) researcher-developed surveys for students and teachers (Appendices B and C), (c) the Leader-member Exchange 10 item scale (LMX-SLX) (Appendices D and E), and (d) the North Carolina CTE end-of-course tests. Specifically, the KAI was used to measure the cognitive style of teachers and students, the researcher-developed survey was used to measure dyadic intensity, the LMX-SLX was used to measure the perceived

quality of dyadic relationships between teachers and students, and the North Carolina CTE end-of-course tests were used to measure student achievement in CTE classes. Additionally, demographic information was collected from teacher and student participants. Specifically, teacher participants were asked to provide demographic data regarding years of teaching experience, primary CTE discipline, level of education, teaching preparation, age, sex, and ethnicity and race. Student participants were asked to provide demographic data regarding age, sex, ethnicity or race, and grade point average. Also, participants were asked to indicate their interest in participating in an interview to explore the development of teacher-student relationships.

KAI. The KAI, which is the measure of adaption-innovation theory, is a single page of items requiring respondents to assess how each item on a list of 32 items relates to them. The inventory is not timed and generally completed in 10 to 15 minutes, which prevents problems of fatigue and boredom during administration. The range of scores on the KAI is 32 to 160, with a theoretical mean of 96. Psychosocial variables of education, occupational status, and age do not significantly correlate with KAI; however, gender does. Women tend to be one third of a standard deviation, which is about 6 to 7 points, more adaptive than men; the normal distribution mean for men is 98 and the normal distribution mean for women is 91 (Kirton, 2003).

Scores on the KAI are returned to respondents as the actual score, not in the form of descriptors such as ‘high innovator’ or ‘low adaptor’, for example. This serves two purposes: first, an exact score prevents ‘boxing’ someone in to a specific group; second, an exact score allows a respondent to compare himself or herself to another individual or group of individuals. In this regard, one is neither a high innovator nor low adaptor, to use the same examples

previously given; rather, one is always either more adaptive or more innovative than another person. As Kirton (2003) explained, “all comparisons are relative to the chosen benchmark of significance to the person” (p. 68).

The KAI was created for adults with working experience. Initial validity studies of the measure relied on six general population samples from 10 countries totaling nearly 3,000 scores with a range just over 100. According to Kirton (2003), “The results from each general population sample distribute on an almost perfect normal curve” (p. 67). Studies of the KAI consistently show the instrument to be highly reliable, stable, and valid.

Important to this study is the reliability of the KAI with a teenage population, considering that the inventory was designed for adults with working experience. Kirton (2003) held that young people can manage the KAI; he also, however, suggested that they be of above average intelligence at age 13 and average intelligence at ages 14 and 15. Additionally, a command of the English language is necessary for successful completion of the instrument. There are numerous checks to indicate whether a respondent is answering as expected, with a low rejection rate of less than two percent; however, this rate can rise to nearly 20 percent with younger test takers and unskilled test administrators.

In the present study, the KAI demonstrated internal consistency with both the teacher and student participant groups, yielding Cronbach’s alpha reliability coefficients of .81 and .67, respectively. Both of these coefficients were above Nunnally’s (1978) .60 standard of acceptable reliability. Further, three student KAIs were rejected from the present study due to the omission of responses above the acceptable level provided by Kirton (2003).

Adaption-innovation theory champions the notion that cognitive style has an early onset and is stable throughout one’s life. The recent popularity of being associated with innovation,

though, might imply that results of the KAI are highly correlated with measures of social desirability; however, this is not the case. Six social desirability studies were conducted using scores from nearly 800 participants, and results showed the average social desirability to be close to zero (Kirton, 2003).

The face validity of the KAI has been demonstrated numerous times. In testing face validity, several studies (Clapp & de Ciantis, 1989; Kirton & McCarthy, 1985; Rickards & Gaston, 1995; Selby, 1992; Selby & Treffinger, 1993) asked people to make evaluations of others based on their knowledge of what is measured by the KAI. The studies used adults making predictions of other adults as well as parents and teachers making predictions of children; collectively, the studies yielded correlations of around .8 (Kirton, 2003). Kirton (2003) reported that over 100 studies have employed the KAI and yielded findings intentionally pursued to test some aspect of the measure's validity with strong support for the tested hypotheses and, in turn, instrument validity.

Researcher-developed survey to measure dyadic intensity. A survey was developed by the researcher to gauge the intensity of teacher-student relationships. The survey, which was administered to students only, asked students to report their level of participation in career and technical student organizations (CTSOs), affiliation with a teacher outside of the educational setting (such as attending church with the teacher or being connected to the teacher as a family friend), length of time the student had been affiliated with the teacher, and number of classes the student had taken with the teacher. All students earned a minimum of two points for currently being enrolled in a teacher's class. One point was earned for being a member of the CTSO associated with a class. One point was earned for being an officer in the CTSO associated with a

class. One point was earned for each level (local, region, federation, state, and/or national) at which students served as an officer in the CTSO associated with a class. One point was earned for each competition at each level in which a student participated in the CTSO associated with a class. One point was earned for each fundraiser in which a student participated in the CTSO associated with a class. Two points were earned for each night spent on a CTSO-related overnight trip taken with the teacher. One-point dyadic intensity scores had a lower limit of two and did not have a predetermined identified upper limit due to the nature of the measure. In the present study, the researcher-developed survey to measure dyadic intensity demonstrated internal consistency within the student participant group, yielding Cronbach's alpha reliability coefficients of .70.

LMX-SLX. The Leader-Member Excellence–Shared-Leadership Exchange (LMX-SLX) instrument, developed by Graen, Hui, and Taylor (2006), measures the perceived quality of relationship with a supervisor, colleague, or subordinate. The LMX-SLX instrument asks respondents to rate their agreement with 10 items relating to their working relationship with supervisors, colleagues, or subordinates on a Likert-type scale of one to five, where one equals strongly disagree and five equals strongly agree. Given that the LMX-SLX can be applied in three contexts (supervisor, colleague, or subordinate), the measure can be used with any of the three contexts serving as referent. Because all items are positively worded and scored equally, no items are reverse coded and the sum of all items represents the total LMX-SLX score. The range of possible scores is 10 to 50, where a higher score indicates a better-quality relationship (Graen, 2009). In the present study, the LMX-SLX was used to measure the perceived quality of relationships between teachers (supervisor) and students (subordinate) from both perspectives.

Therefore, the LMX-SLX used the student as referent to gauge the quality of the teacher-student relationship from the student's perspective and the teacher as referent to gauge the quality of the teacher-student relationship from the teacher's perspective. G. B. Graen indicated that LMX theory applies smoothly to students and their teachers (personal communication, September 27, 2011), and in this regard granted permission to use the LMX-SLX instrument only (Appendix F). No other forms of LMX measurement could be used for the present study; however, the LMX-SLX was adapted specifically to reflect teacher-student relationships.

In the present study, the LMX-SLX demonstrated high internal consistency with both the teacher and student participant groups, yielding Cronbach's alpha reliability coefficients of .93 and .91, respectively. The classical item analysis of the LMX-SLX conducted by Scherbaum, Naidoo, and Ferreter (2007) also showed that items on the LMX-SLX demonstrate high levels of discrimination and are similar in level of discrimination. Thus, the LMX-SLX instrument was a reliable measure for "distinguishing between individuals with similar, but differing levels of LMX" (Scherbaum, Naidoo, & Ferreter, 2007).

North Carolina CTE End-of-course tests. In North Carolina, most secondary level CTE classes have a post assessment that is required for all students at the end of a course. These post assessments measure student knowledge of CTE course objectives outlined in the North Carolina CTE essential standards. According to Josh Bledsoe (personal communication, October 18, 2011), North Carolina state supervisor of agricultural education, the end-of-course tests provide multiple choice, criterion-referenced tests based on CTE course competencies. Students are assessed before, during (in the middle), and after instruction occurs, with the post-test occurring at course completion. The tests, which consist of 100 multiple-choice items, are

secure, not granting access to teachers prior to test administration, and the students earn a score on a 100-point scale. Scores on the CTE end-of-course test comprise 20% of a student's final course grade. Items on the post assessments were developed by content area specialists and teachers and must endure a validation process before inclusion in the post assessment test bank (Public Schools of North Carolina [PSNC], 2010). Validity of test items is established as a team of teachers, industry representatives, and subject matter experts reviews each item (PSNC, 2010). Individuals on the validation teams rate items, and agreement that each item measures mastery of the course objective to which it was matched must be reached (PSNC, 2010). While specific quantitative measures of reliability are not released by North Carolina, formal reliability studies were conducted in 1993 and 2000–2008 and reported high reliability scores for the post assessments (PSNC, 2010). Student scores on the post-test will represent student achievement in the present study.

Data collection. The researcher administered the instruments used to collect quantitative data. Prior to administering the instruments, the researcher met with participants to provide context for the study and answer any questions. Teacher consent (Appendix G), minor student assent (Appendix H) and parental consent (Appendix I), and non-minor consent (Appendix J) were required for all participants. The rights and safety of subjects who participated in the present study were protected as the researcher adhered to guidelines of the Virginia Tech Institutional Review Board for Research Involving Human Subjects (Appendix K).

The LMX-SLX was administered to all teacher (N=11) and student (N=210) participants in the present study by the researcher. The teacher participants were asked to complete one

LMX-SLX with teacher as referent for each student, while student participants were asked to complete the LMX-SLX with student as referent.

The researcher-developed survey was administered to all teacher and student participants by the researcher. This survey was coded with a unique alphanumeric identifier corresponding with the name of each participant in the study.

The KAI was administered to all teacher and student participants in the present study by the researcher. Prior to administering the KAI, students received a brief description of A-I theory and the KAI, as was done in the study involving middle school students by Selby, Treffinger, Isaksen, and Powers (1993). Additionally, based on recommendations from the pilot study, the researcher provided definitions for terms used in the KAI that may have been confusing to some participants. This facilitated more efficient administration of the KAI, allowing participants to refer to the provided definitions for assistance rather than asking the researcher for a definition during actual administration of the KAI.

The demographic data collector was administered to all teacher and student participants by the researcher. Once participants completed all instruments, the researcher transferred responses and scores into a database in preparation for data analysis.

Teacher participants in the study administered the CTE end-of-course tests. Student grades on the CTE end-of-course tests were provided to the researcher by each teacher.

Data analysis. Pearson product-moment correlation coefficients were computed to answer research question one: what are the relationships between cognitive gap between teachers and students, dyadic intensity, LMX quality, and student achievement? Pearson product-moment

correlation coefficients are the most common type of correlation, “which measures the degree of relationship between two continuous variables” (Coolidge, 2006, p.162).

Research question 1a asked which dimensions of teacher-student relationships affect LMX quality from the teacher perspective; research question 1b asked which dimensions of teacher-student relationships affect LMX quality from the student perspective. These questions were analyzed using forced entry regression. In forced entry regression, “all variables are forced to enter the equation at the same time” (Keith, 2006, p. 76). Forced entry regression is appropriate in explanatory research for determining the extent to which one or more variables influence an identified outcome, estimating only the direct effect of each independent variable on the dependent variable.

Research question two explored the effects of cognitive gap, teacher LMX, and student LMX on student achievement, and was analyzed using the method of path analysis. According to Fraenkel and Wallen (2000), “path analysis is used to test the possibility of a causal connection among three or more variables” (p. 366). While multiple regression could have been used to answer research question two, a difficulty of multiple regression is that different conclusions can be drawn regarding the effects of one variable on another depending on the type of multiple regression used and the interpretation of statistics (Keith, 2006). This challenge is removed in path analysis, because path analysis does not focus only on the direct effects but also focuses on indirect and total effects (Keith, 2006). Simply put, path analysis is much more specific than regression because it “looks explicitly at cause” (Olobatuyi, 2006, p. 11). In this regard, “path analysis is superior to ordinary regression analysis because it allows us to examine the causal processes underlying the observed relationship and to estimate the relative importance of alternative paths of influence” (Olobatuyi, 2006, p. 11). The idea behind path analysis is for

the researcher to devise a theory about potential causes of a phenomenon (Fraenkel & Wallen, 2000).

In the present study, the phenomenon being investigated was the effect of teacher-student relationships on student achievement. Kenny (1979) and Kline (1998) explained that the first step for conducting path analysis is to develop and draw the model. The path model was developed based on many lines of evidence including formal theory, informal theory, time precedence, previous relevant research, and logic (Keith, 2006). For the present study, the research developed a five variable path model (Figure 3.2), showing how the variables are related to one another.

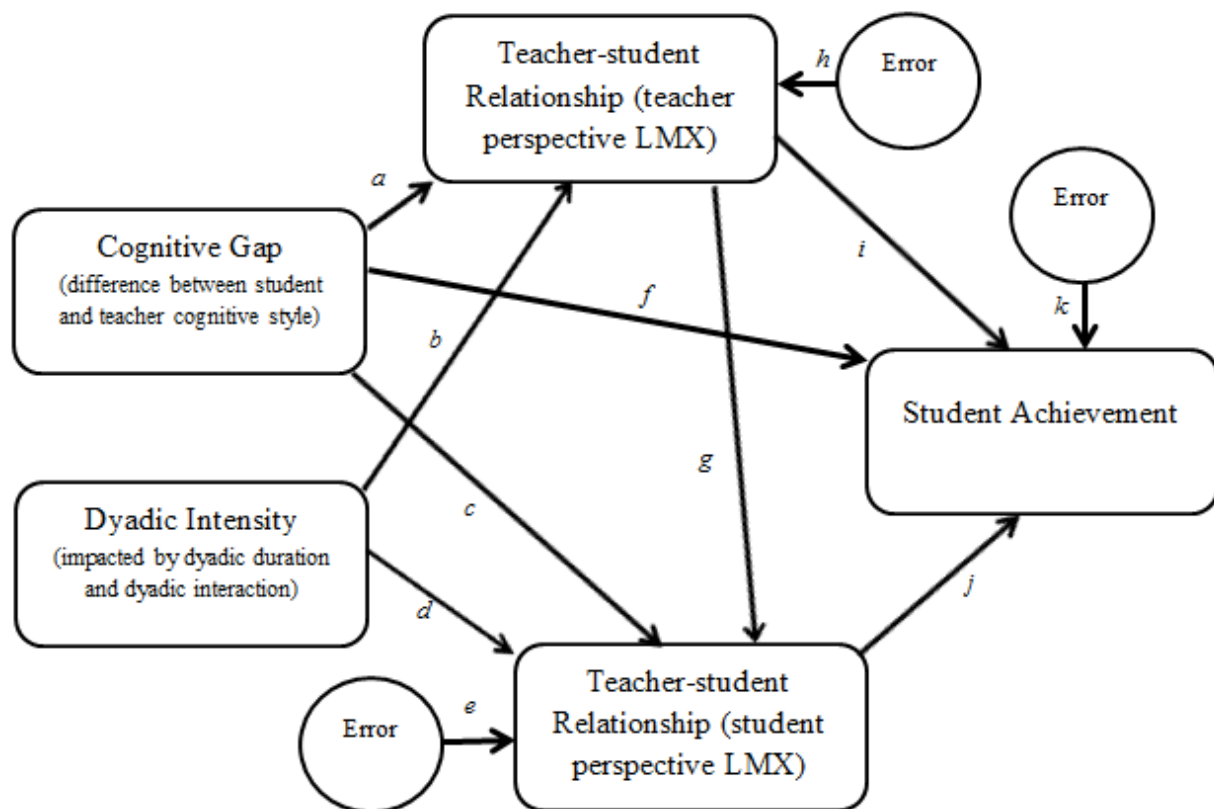


Figure 3.2. Five variable path model.

In the model, there are three endogenous variables: teacher LMX, student LMX, and student achievement. Additionally, two of the endogenous variables also serve as exogenous variables—teacher LMX and student LMX—bringing the total number of exogenous variables to four. Each of the variables in the model has been operationally defined, which is essential because “path models require more stringent theoretical specification than multiple regression models” (Olobatuyi, 2006, p. 54). The researcher hypothesized that the cognitive gap between teachers and students affects the teacher-student relationship from the teacher’s perspective—referred to as Teacher LMX, (path *a*)—, student achievement (path *f*), and the teacher-student relationship from the student’s perspective—referred to as Student LMX (path *c*). It was further hypothesized that teacher-student dyadic intensity would affect teacher LMX (path *b*) and student LMX (path *d*). Because the actions of the leader determine the pace of leader-member exchange, it was assumed teacher LMX would impact student LMX (path *g*); additionally, the researcher hypothesized that teacher LMX would impact student achievement (path *i*). Finally, the researcher hypothesized that student LMX would impact student achievement (path *j*). The order of this path model is conventional, with the independent variables appearing to the left and the dependent variables to the right (Olobatuyi, 2006). In consideration of this hypothesized model, there are exogenous variables that could affect the endogenous variables other than those listed, leaving some variables unaccounted for. These deficiencies are corrected by including disturbances in the model, identified by the label *error* (paths *e*, *h*, and *k*), which “represent all other influences on the outcome variables other than those shown in the model” (Keith, 2006, p. 217). The proposed model served as the conceptual framework from which research questions were derived.

The second step for conducting path analysis is to check the identification status of the model (Kenny, 1979; Kline, 1998). The current model is over-identified, meaning that there is at least one pair of variables not connected to each other by direct paths. In the present study, the variables of dyadic intensity and student achievement are not connected. Over-identification is not a problem in path analysis because it may help “evaluate the quality of our models” (Keith, 2006, p. 222).

The third step, according to Kenny (1979) and Kline (1998), is to measure the variables in the path model. This step involves selecting tests of other means by which data will be collected and administering these measures. Descriptions of methods used to measure the variables in the model have previously been described in the instrumentation segment of this chapter, with the exception of the variable of cognitive gap. Cognitive gap represents the difference between teacher scores on the KAI and student scores on the KAI.

Step four in path analysis is to estimate the model (Kenny, 1979; Kline, 1998). This means estimating each path to a dependent variable. To estimate the paths to teacher-student relationship from the teacher perspective, teacher-student relationship from the teacher perspective was regressed on cognitive gap and dyadic intensity using forced entry regression. To estimate the paths to teacher-student relationship from the student perspective, teacher-student relationship from the student perspective was regressed on cognitive gap, dyadic intensity and teacher-student relationship from the teacher perspective using forced entry regression. Finally, to estimate the paths to student achievement, student achievement was regressed on cognitive gap, teacher-student relationship from the teacher perspective, and teacher-student relationship from the student perspective using forced entry regression. After

estimating each path to an endogenous variable, the path from each disturbance (paths e , h , and k) was calculated by taking the square root of $1 - R^2$ from each regression equation (Keith, 2006).

To complete the fifth step of path analysis, which is interpretation (Kenny, 1979; Kline, 1998), each Beta value was placed into the model for the purpose of interpreting the effects of each variable, and the relationships among the correlation coefficients were analyzed (Fraenkel & Wallen, 2000). In addition to the direct effect, path analysis allows for interpreting the indirect effect as well as the total effect (Keith, 2006). Analyzing the data in this regard allowed the researcher to determine if correlations among all the variables were consistent (Fraenkel & Wallen, 2000) with the proposed theory.

Qualitative Strand

The second strand of this embedded sequential explanatory case study with a quantitative→qualitative two-strand design is qualitative in nature. The purpose of the qualitative strand is to investigate how teachers and students describe their dyadic relationships.

Participant selection. According to Teddlie & Tashakkori (2009), “purposive sampling techniques are primarily used in QUAL studies and may be defined as selecting units based on specific purposes associated with answering a research study’s questions” (p. 171). Those who use purposive sampling in selecting participants for qualitative research aim to produce a variety of detail from a few cases (Teddlie & Tashakkori, 2009), but determining sample size in qualitative research can be difficult. As indicated by Patton (2002), “there are no rules for sample size in qualitative inquiry” (p. 244). Though universally accepted rules for sample size in qualitative research do not exist (Teddlie & Tashakkori, 2009), methodologists have developed

some guidelines that can be followed, according to the type of qualitative research design. The present study employs an embedded case study approach, and methodologists suggest a sample size upper limit of 15 participants in case study designs. Case studies of institutions frequently range from 4 to 12 participants, and case studies of individuals often range from six to 24 individual cases (Collins, Onwuegbuzie, & Jiao, 2007; Miles & Huberman, 1994; Teddlie & Yu, 2006). An additional means by which researchers may select a sample size when conducting qualitative research is considering saturation (Strauss & Corbin, 1998), which is the point when a researcher has gathered a range of ideas and is not collecting new information (Krueger & Casey, 2000). In the present study, participants indicated their interest in participating in an interview to explore the development of teacher-student relationships.

In sequential mixed methods studies that follow a quantitative→qualitative two-strand design, the final sample from the quantitative strand of inquiry serves as the sampling frame for the qualitative strand (Teddlie & Tashakkori, 2009). In the present study, the sampling frame was decreased to those participants from the quantitative strand that indicated interest in participating in an interview. Twelve participants were selected for the qualitative strand: four teachers and eight students. The teacher participants were selected using a typical case sampling strategy, “which involves selecting those cases that are the most typical, normal, or representative of the group of cases under consideration” (Teddlie & Tashakkori, 2009, p. 176). The four teachers whose LMX-SLX mean score was closest to the group mean score were chosen. The student participants were selected using intensity sampling to achieve comparability, which is one of a wide variety of purposive sampling techniques that exist (Teddlie & Tashakkori, 2009). As explained by Patton (2002), intensity sampling occurs when a researcher chooses highly informative cases that intensively represent a phenomenon of interest.

Four students who reported an extremely high LMX-SLX score, in comparison with their peers, and four students who reported a low LMX-SLX score, in comparison with their peers, were selected. The researcher believes that a point of saturation was reached after interviewing twelve participants.

Preliminary work. An a priori propositions table was constructed to guide the researcher in developing the interview guide. As explained by Creswell (2007), such propositions aid in developing causal hypotheses and inform analytical methods. Table 3.1 connects researcher propositions with supporting literature and interview questions.

Table 3.1

a Priori Propositions

Propositions	Supporting Literature	Research Questions	Interview Question
The cognitive gap between teachers and students will affect the quality of relationships between teachers and students and student achievement.	As Kirton (2003) explains, the way people prefer to deal with cognitive structure is significant to the differences between adaptive and innovative tendencies, and the characteristics of these tendencies manifest in the way people define problems, generate solutions, create policies, and work in organizations. In large groups, small groups, and even dyadic relationships, KAI score is relevant because a small variance between the scores of two people will yield a noticeable difference (Kirton, 2003).	1. What are the relationships between cognitive gap between teachers and students, dyadic intensity, LMX quality, and student achievement?	What motivates you to interact with your students/teachers?
Dyadic intensity will affect the quality of relationships between teachers and students.	LMX theory holds that dyadic relationships between leaders and their subordinates develop over time, are negotiated between both individuals in the dyad, and the quality of relationships between a leader and his subordinates will vary (Graen & Uhl-Bien, 1995).	1a. What dimensions of teacher-student relationships affect LMX quality from the teacher perspective?	Why were you / were you not motivated to improve your relationship with _____?
The quality of relationships between teachers and students from the teacher perspective will affect the quality of relationships from the student perspective.	LMX theory proposes that managers be encouraged and trained in making partnership offers to all subordinates to make the LMX process more equitable and to increase the leadership of managers (Graen & Uhl-Bien, 1995).	1b. What dimensions of teacher-student relationships affect LMX quality from the student perspective?	What would you like to tell me about how teacher-student relationships form in your class?
		3. How do teachers and students describe the development of teacher-student dyadic relationships and the impact of teacher-student relationships on student achievement?	How has your relationship with _____ changed?
			What caused your relationship with _____ to get better / worse?
			How do you develop relationships with your students/teachers?
			Why were you / were you not motivated to improve your relationship with _____?
			When you encounter a student for the first time, how do you interact with him/her?

Table 3.1

a Priori Propositions Continued

Propositions	Supporting Literature	Research Questions	Interview Question
The quality of relationships between teachers and students from the teacher perspective will affect student achievement. Also, the quality of relationships between teachers and students from the student perspective will affect student achievement.	Leader-member exchange (LMX) theory reasons that subordinates who have a high quality relationship with their leader are willing to do more than is required (Northouse, 2010). According to Brophy and Good (1974), teacher-student relationships cause teachers to treat students differently in their classrooms, and inequitable treatment decreases the confidence and aspirations of some students.	2. What are the effects of cognitive gap, teacher LMX, and student LMX on student achievement? 3. How do teachers and students describe the development of teacher-student dyadic relationships and the impact of teacher-student relationships on student achievement?	How is his / her academic performance in _____ class? Would you like to have a better relationship with _____? What actions have you taken to improve your relationship with _____? Do you interact differently with those who you have a higher quality relationship than others? Why would students in your class be motivated / not be motivated to develop a high quality relationship with you? How is your academic performance in _____ class? How does your academic performance in _____ class compare to your relationship with _____?

Pilot study. The interview guide used in the qualitative strand was pilot tested with two CTE teachers and three CTE students. All five participants were also involved in the quantitative pilot study. No modifications were made to the interview guide after the pilot study, as all participants felt that questions provided ample opportunity to elaborate on the development of teacher-student relationships and how they develop.

Data collection. Data for the qualitative strand was collected through in-depth, semi-structured interviews using open-ended questions following an interview guide. According to Seidman (2006), “at the root of in-depth interviewing is an interest in understanding the lived experience of other people and the meaning they make of that experience” (p. 9). Semi-structured interviews require the researcher to prepare questions in advance; however, the questions developed must be open to the degree that they allow a researcher to improvise subsequent questions (Wengraf, 2004). The semi-structured nature of interviews was appropriate for the present study, as semi-structured interviews “may yield much more than fully structured ones can” (Wengraf, 2004, p. 5).

Questions that formed the interview guide were developed after quantitative data analysis during the pilot study, as the first strand of research should inform design components of the next strand in a sequential explanatory two-strand mixed methods design (Teddle & Tashakkori, 2009). Open-ended questions were structured such that responses could be used to confirm or disconfirm conclusions of the first strand or yield additional information to substantiate inferences from the first strand (Tashakkori & Teddle, 2003). Specifically, the researcher hoped to gain a qualitative understanding of teacher-student relationship development. Questions on the interview guide probed for information regarding specific teacher-student relationships in

consideration of cognitive gap and provided participants with an opportunity to speak about teacher-student relationship development in general.

The in-depth interviews were digitally voice recorded, as suggested by Seidman (2006), in order to capture the true words of the interviewee, rather than rely on the interviewer's paraphrasing. Also, recording the interviews provided assurance to interviewees that a record existed of what they actually said, thus increasing interviewee confidence that what they said would be treated appropriately (Seidman, 2006). Seidman (2006) further recommended transforming the words of interviewees into text through transcription. Because the transcription of interviews is time-consuming, interviewers who perform their own transcriptions may become tired and, consequently, fervor for the research process may decrease (Seidman, 2006). "The ideal solution is for the researcher to hire a transcriber" (Seidman, 2006, p. 115); therefore, the researcher in the present study hired a transcriber to perform the interview transcriptions. To further ensure the quality of data collection, member checks were conducted, where transcriptions of interviews were provided to each interviewee to verify that his or her words were accurately represented (Teddlie & Tashakkori, 2009).

Data analysis. Research question three asked how teachers and students describe the development of teacher-student dyadic relationships and the impact of teacher-student relationships on student achievement. The data were analyzed and reduced inductively, following processes prescribed by Seidman (2006), which began with initial coding and, through multiple iterations of data analysis, led to the emergence of themes.

In the process of analyzing qualitative data connections, Seidman (2006) suggested that the researcher begin by reading through transcripts, "noting what is interesting, labeling it, and

putting it into appropriate files” (p. 125); this procedure is called coding. In the first iteration data analysis focused mainly on surface content. Subsequent iterations of data analysis required the researcher to identify emerging patterns and, from those patterns, emerging categories. HyperResearch © qualitative data analysis software was used for coding and categorization of qualitative data. Finally, the researcher searched for connections between various categories that developed into themes. Tagg (1985) suggested that qualitative data analysis is an intuitive process; however, Seidman (2006) held that researchers should identify criteria for organizing and classifying information. The final stage of analyzing the data required the researcher to make interpretations of the themes and support interpretations with passages from the interviews.

Additional member checks were conducted as one approach of checking the validity of qualitative data analysis. Creswell and Plano Clark (2011) explained that member checking involves presenting summaries of findings to study participants and asking them to verify that the findings accurately reflect their experiences.

Trustworthiness.

Because many critics are reluctant to accept the findings from qualitative research, Guba (1981) developed criteria for assessing the trustworthiness of qualitative inquiries. Guba’s (1981) framework recommended that qualitative researchers ensure the credibility, transferability, dependability, and confirmability of their research to demonstrate trustworthiness. To address trustworthiness, researchers can employ a variety of techniques. In the present study, the researcher ensured credibility by developing a familiarity with the culture being investigated, using a mixed methods approach for triangulation of data, and conducting member checks. Transferability was guaranteed as the researcher described the context of the study and

described, in detail, the phenomenon under investigation. The researcher demonstrated dependability by providing an in-depth description of the methodology, which allowed for duplication of the present study. Finally, confirmability was achieved by admitting researcher beliefs and assumptions in regard to the study and identifying limitations of the study.

Clarifying researcher bias. Bias of the researcher can affect the reliability and validity of qualitative research; therefore, the researcher should clarify bias when conducting qualitative investigations. The researcher in the present study acknowledged the bias of teacher-student relationship development garnered from seven years of secondary-level CTE teaching experience. Any propositions from initial bias were either supported by literature or dispelled due to lack of literary support. Further, pilot testing of the interview guide allowed the researcher to test for biased questions to avoid leading questions and promote neutrality.

Integration of quantitative and qualitative data. A mixed methods approach to inquiry allows for a stronger interpretation and explanation of the quantitative and qualitative results. As Creswell and Plano-Clark (2011) explained, integration is the point in mixed method research where mixing data from multiple strands occurs. The mixing of data in the present study occurred at two points. First, quantitative data analysis aided the researcher in selecting participants for the qualitative study. Second, qualitative data was used to support or dispel findings from the quantitative strand. Mixing the data in this way provided for a better understanding of teacher-student relationship development in regard to leader-member exchange and student achievement.

Summary

Chapter 3 introduced the embedded sequential explanatory case study with a quantitative→qualitative two-strand design used in the present study. The present mixed methods design was explained in detail and a rationale for selecting this approach was provided. Additionally, the context of the study, participants in the study, instrumentation used, and means by which data was collected and analyzed was explained.

Chapter four will present results of the quantitative and qualitative data analysis. Further, results from both strands of inquiry are merged in an effort to mix methods and additional implications for the phenomenon of teacher-student relationships are explored.

Chapter 4

Introduction

Background of the present study was presented in Chapter 1, while Chapter 2 provided a review of literature on teacher leadership, learning theory, LMX theory, and A-I theory. Chapter 3 introduced the research design. The purpose of this study was to explain how the quality of teacher-student relationships and the gap of cognitive styles between teachers and students impact student achievement. An embedded sequential explanatory case study with a quantitative→qualitative two-strand design of inquiry approach was used.

In the first strand of inquiry, quantitative measures were used to answer the following research questions:

1. What are the relationships between the cognitive gap between teachers and students, dyadic intensity, LMX quality, and student achievement?
 - a. What dimensions of teacher-student relationships affect LMX quality from the teacher perspective?
 - b. What dimensions of teacher-student relationships affect LMX quality from the student perspective?
2. What are the effects of cognitive gap, teacher LMX, and student LMX on student achievement?

Quantitative data used to answer research questions one and two were gathered using the Kirton Adaption-Innovation Inventory (KAI), a demographic survey, the Leader-Member Excellence-Shared-Leadership Exchange (LMX-SLX) instrument, and a standardized end of course test.

In the second, qualitative strand of inquiry, in-depth, semi-structured interviews with participants were used to answer the following research question:

3. How do teachers and students describe the development of teacher-student dyadic relationships and the impact of teacher-student relationships on student achievement?

Data from both strands of inquiry were then joined to answer the following research question:

4. How do the descriptions of dyadic relationship development offered by teachers and students converge with the quantitative results?

This chapter provides a description of the participants from each element of the study, presents findings from both strands of inquiry, and merges the quantitative and qualitative data to compare, contrast, and embed conclusions from each strand.

Quantitative Strand Findings

Participants. The quantitative strand of inquiry involved two subgroups of participants: teachers and students. Table 4.1 provides a description of the teacher participants and Table 4.2 provides a description of the student participants.

There were 11 teachers who participated in the present study, five female and six male. All teacher participants were white, ranging in age from 31 to 51 and over. The teaching experience of teacher participants ranged from a first-year teacher to more than 26 years of teaching, representing six unique disciplines of Career and Technical Education (CTE). Four of the teachers earned certification through a traditional teacher preparation program, while the remaining seven were alternatively certified. Of the 11 teachers who participated, two reported the highest level of education completed as something other than a bachelor's, master's, or doctoral degree. Five held a bachelor's degree and four held a master's degree.

Table 4.1

Description of Quantitative Strand Teacher Participants (n=11).

Variable	<i>n</i>	%
Sex		
Female	5	45.5
Male	6	54.5
Race		
White	11	100
Age		
31–35	1	9.1
36–40	2	18.2
41–45	4	36.3
46–50	3	27.3
51 and over	1	9.1
Teaching Experience		
1–5 years	1	9.1
6–10 years	4	36.3
16–20 years	2	18.2
21–25 years	1	9.1
26 or more years	3	27.3
CTE Discipline		
Agriculture	2	18.2
Business and Information Technology	1	9.1
Family and Consumer Sciences	1	9.1
Health Occupations	2	18.2
Marketing	1	9.1
Trade and Industrial	4	36.4
Type of Teacher Preparation Program		
Traditional	4	36.4
Alternative	7	63.6
Highest Level of Education		
Bachelor's Degree	5	45.5
Master's Degree	4	36.4
Other	2	18.2

The student participant group was comprised of 210 students; however, not all participants provided complete demographic data. Of those who did provide demographic data, 113 were female and 92 male. All of these students were enrolled in a CTE class. Five racial groups were represented by the students including Hispanic/Latino of any race (n=3), American

Indian or Alaska Native (n=3), Native Hawaiian or Pacific Islander (n=1), White (n=196), and two or more races (n=3). Student participants ranged in age from 14 to 19, with the majority reporting an age of 15, 16, or 17 years.

Table 4.2

Description of Quantitative Strand Student Participants (n=210).

Variable	<i>n</i>	%
Sex		
Female	113	53.8
Male	92	43.8
Racial Group		
Hispanic / Latino of any race	3	1.4
American Indian or Alaska Native	3	1.4
Native Hawaiian or Pacific Islander	1	.5
White	196	93.3
Two or more races	3	1.4
Age		
14	16	7.6
15	54	25.7
16	51	24.3
17	71	33.8
18	12	5.7
19	2	1.0

Note. Not all participants provided complete demographic data.

Table 4.3 shows the mean, standard deviation, and minimum and maximum scores for teacher KAI, student KAI, cognitive gap, dyadic intensity, teacher LMX, student LMX, and student achievement. The teacher KAI (n=11) had a mean score of 94.64, a standard deviation of 12.59, a minimum score of 79 and a maximum score of 123. The student KAI (n=210) had a mean score of 92.12, a standard deviation of 10.71, a minimum score of 68, and a maximum score of 127. Cognitive gap had a mean score of 11.46, a standard deviation of 9.82, a minimum score of 0, and a maximum score of 49. The measure of dyadic intensity had a mean score of 6.67, a standard deviation of 8.33, a minimum score of 2 and a maximum score of 59. Teacher

LMX (n=11) had a mean score of 41.39, a standard deviation of 6.26, a minimum score of 25, and a maximum score of 50. Student LMX (n=210) had a mean score of 41.45, a standard deviation of 6.04, a minimum score of 14, and a maximum score of 50. Finally, the measure of student achievement (n=206) had a mean score of 86.72, a standard deviation of 9.13, a minimum score of 51, and a maximum score of 100.

Table 4.3

Means, Standard Deviations, Minimums, and Maximums for Teacher KAI, Student KAI, Cognitive Gap, Dyadic Intensity, Teacher LMX, Student LMX, and Student Achievement.

Variable	n ^f	<i>M</i>	<i>SD</i>	Min	Max
Teacher KAI ^a	11	94.64	12.59	79	123
Student KAI ^a	210	92.12	10.71	68	127
Cognitive Gap ^b	210	11.46	9.82	0	49
Dyadic Intensity ^c	210	6.67	8.33	2	59
Teacher LMX ^d	210	41.39	6.26	25	50
Student LMX ^d	210	41.45	6.04	14	50
Student Achievement ^e	206	86.72	9.13	51	100

Note. ^aKAI scores can range from 32-160. ^bCognitive gap scores are the difference between Teacher KAI and Student KAI and can range from 0-128. ^cDyadic intensity scores have a lower limit of 2 and do not have an identified upper limit. ^dLMX scores can range from 10-50.

^eStudent achievement scores can range from 0-100. ^fMissing data were excluded.

Data analysis. Figure 4.1 presents the hypothesized model of the effects of cognitive gap, dyadic intensity, teacher LMX, and student LMX on student achievement. In the model, there are three endogenous variables: teacher LMX, student LMX, and student achievement. Additionally, two of the endogenous variables also serve as exogenous variables—teacher LMX and student LMX—bringing the total number of exogenous variables to four. The researcher assumed that the cognitive gap between teachers and students affects the teacher-student relationship from the teacher’s perspective, referred to as Teacher LMX, (path a), student achievement (path f), and the teacher-student relationship from the student’s perspective,

referred to as Student LMX (path c). It was further assumed that teacher-student dyadic intensity would affect teacher LMX (path b) and student LMX (path d). Because the actions of the leader determine the pace of leader-member exchange, it was assumed teacher LMX would impact student LMX (path g); additionally, the researcher assumed that teacher LMX would impact student achievement (path i). Finally, the researcher assumed that student LMX would impact student achievement (path j). Paths e, h, and k, represent influences on the endogenous variable not shown in the model. The proposed model served as the conceptual framework from which research questions were derived.

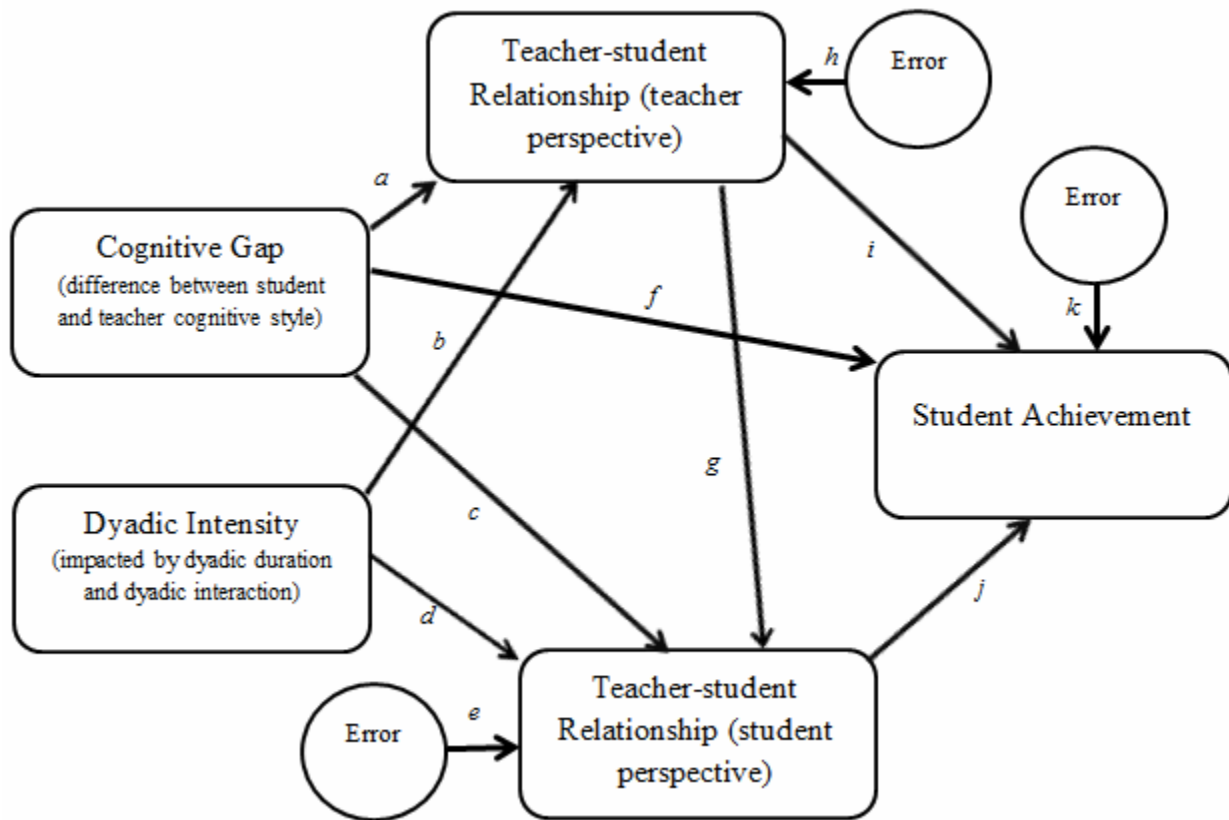


Figure 4.1. Model of the effects of cognitive gap, dyadic intensity, teacher LMX, and student LMX on student achievement.

Research Question 1: What are the relationships between the cognitive gap between teachers and students, dyadic intensity, LMX quality, and student achievement? Pearson product-moment correlation coefficients were computed to assess the relationships between the cognitive gap between teachers and students, dyadic intensity, LMX quality, and student achievement. Three statistically significant relationships were identified among the various dimensions of teacher-student relationships; specifically, the relationships between dyadic intensity and teacher LMX, dyadic intensity and student LMX, and teacher LMX and student LMX were significant. There was a weak, positive relationship between dyadic intensity and teacher LMX ($r=.15$, $p<0.05$). A weak, positive relationship was found between dyadic intensity and student LMX ($r=.21$, $p<.01$). Also, the correlation coefficient revealed a moderate, positive relationship between teacher LMX and student LMX ($r=.43$, $p<.01$). Table 4.4 presents a summary of correlation coefficients for the dimensions of teacher-student relationships under investigation.

Table 4.4

Correlation Matrix for Hypothesized Path Model Variables.

		Cognitive Gap	Dyadic Intensity	Teacher LMX	Student LMX	Student Achievement
Cognitive Gap	Pearson Correlation	-				
Dyadic Intensity	Pearson Correlation	-.03	-			
Teacher LMX	Pearson Correlation	-.04	.15*	-		
Student LMX	Pearson Correlation	.08	.21**	.43**	-	
Student Achieve.	Pearson Correlation	-.02	.11	.10	.13	-

Note. * $p<0.05$; ** $p<0.01$.

Research Question 1a: What dimensions of teacher-student relationships affect LMX quality from the teacher perspective? A forced entry regression analysis was conducted to determine which dimensions of teacher-student relationships affect LMX quality from the teacher perspective. According to Keith (2006), forced entry regression is appropriate for explanatory research, and has the advantage of providing the direct effect of each independent variable on the dependent variable. Table 4.5 shows the results of the regression analysis. Though the variable of dyadic intensity ($b=.112$, $t=2.171$, $p<0.05$) had a significant effect on teacher LMX, the overall regression is not statistically significant ($F=2.561$, $p>0.05$).

Table 4.5

Regression Output for Teacher LMX (X_3) on Cognitive Gap (X_1) and Dyadic Intensity (X_2).

Model Summary							
Model	R	R ²	Adjusted R Square	Std. Error of the Estimate			
1	.155 ^a	.024	.015	6.215			
a. Predictors: (Constant), Cognitive Gap, Dyadic Intensity.							
ANOVA							
Model	Sum of Squares	df	Mean Square	F	Sig.		
Regression	197.824	2	98.912	2.561	.080		
Residual	7996.157	207	38.629				
Total	8193.981	209					
Coefficients							
Model	Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics		
	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	40.928	.752		54.410	.000		
Cognitive Gap	-.025	.044	-.039	-.569	.570	.999	1.001
Dyadic Intensity	.112	.052	.149	2.171	.031*	.999	1.001

Note. * $p<0.05$; ** $p<0.01$. ^aDependent Variable: Teacher LMX.

Research Question 1b: What dimensions of teacher-student relationships affect

LMX quality from the student perspective? A forced entry regression analysis was conducted to determine which dimensions of teacher-student relationships affect LMX quality from the student perspective. Table 4.6 shows the results of the regression analysis. The three variables of cognitive gap, dyadic intensity, and teacher LMX, in combination, account for 21.4% of the variance in student LMX. The overall regression is statistically significant ($F=18.656$, $p<0.01$). The variables of dyadic intensity ($b=.107$, $t=2.356$, $p<0.05$) and teacher LMX ($b=.395$, $t=6.550$, $p<0.01$) had a significant effect on student LMX.

Table 4.6

Regression Output for Student LMX (X_4) on Cognitive Gap (X_1), Dyadic Intensity (X_2), and Teacher LMX (X_3).

Model Summary							
Model	R	R ²	Adjusted R Square	Std. Error of the Estimate			
1	.462 ^a	.214	.202	5.396			
a. Predictors: (Constant), Cognitive Gap, Dyadic Intensity, Teacher LMX.							
ANOVA							
Model	Sum of Squares	df	Mean Square	F	Sig.		
Regression	1629.686	3	543.229	18.656	.000**		
Residual	5998.338	206	29.118				
Total	7628.024	209					
Coefficients							
	Unstandardized Coefficients		Standardized Coefficients	Collinearity Statistics			
Model	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	23.651	2.555		9.258	.000		
Cognitive Gap	.064	.038	.103	1.672	.096	.997	1.003
Dyadic Intensity	.107	.045	.147	2.356	.019*	.977	1.024
Teacher LMX	.395	.060	.410	6.550	.000**	.976	1.025

Note. * $p<0.05$; ** $p<0.01$. ^aDependent Variable: Student LMX.

Computation of additional path coefficients. A third forced entry regression analysis was conducted to calculate the path coefficients that represent the effects of teacher LMX, cognitive gap, and student LMX on student achievement. Table 4.7 shows the results of the regression analysis. The three variables of teacher LMX, cognitive gap, and student LMX, in combination, account for 2.1% of the variance in student achievement. The overall regression is not statistically significant ($F=1.456$, $p>0.05$). None of the variables in the model had a significant effect on student achievement.

Table 4.7

Regression Output for Student Achievement (X_4) on Cognitive Gap (X_1), Teacher LMX (X_2), and Student LMX (X_3).

Model Summary							
Model	R	R ²	Adjusted R Square	Std. Error of the Estimate			
1	.145 ^a	.021	.007	9.097			
a. Predictors: (Constant), Teacher LMX, Cognitive Gap, Student LMX.							
ANOVA							
Model	Sum of Squares	df	Mean Square	F	Sig.		
Regression	361.361	3	120.454	1.456	.228		
Residual	16716.309	202	82.754				
Total	17077.670	205					
Coefficients							
	Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics		
Model	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	76.786	5.145		14.924	.000		
Teacher LMX	.073	.113	.051	.648	.518	.811	1.233
Cognitive Gap	-.027	.065	-.029	-.413	.680	.986	1.014
Student LMX	.174	.117	.115	1.488	.138	.808	1.238

Note. * $p<0.05$; ** $p<0.01$. ^aDependent Variable: Student Achievement.

Research Question 2: What are the effects of cognitive gap, teacher LMX, and student LMX on student achievement? Using the three multiple regression models previously examined, a path analysis was conducted to determine the causal effects of cognitive gap, teacher LMX, and student LMX on student achievement. The path coefficients, which are the standardized regression coefficients, are presented in the path model shown in Figure 4.2. The data partially support the path model, as the path coefficients from dyadic intensity to teacher LMX, dyadic intensity to student LMX, and teacher LMX to Student LMX are statistically significant. None of the paths to student achievement, however, were statistically significant. The statistical significance of the second regression model, student LMX, and the path coefficients from dyadic intensity to teacher LMX and teacher LMX to student LMX, indicate the potential indirect effect of dyadic intensity on student LMX.

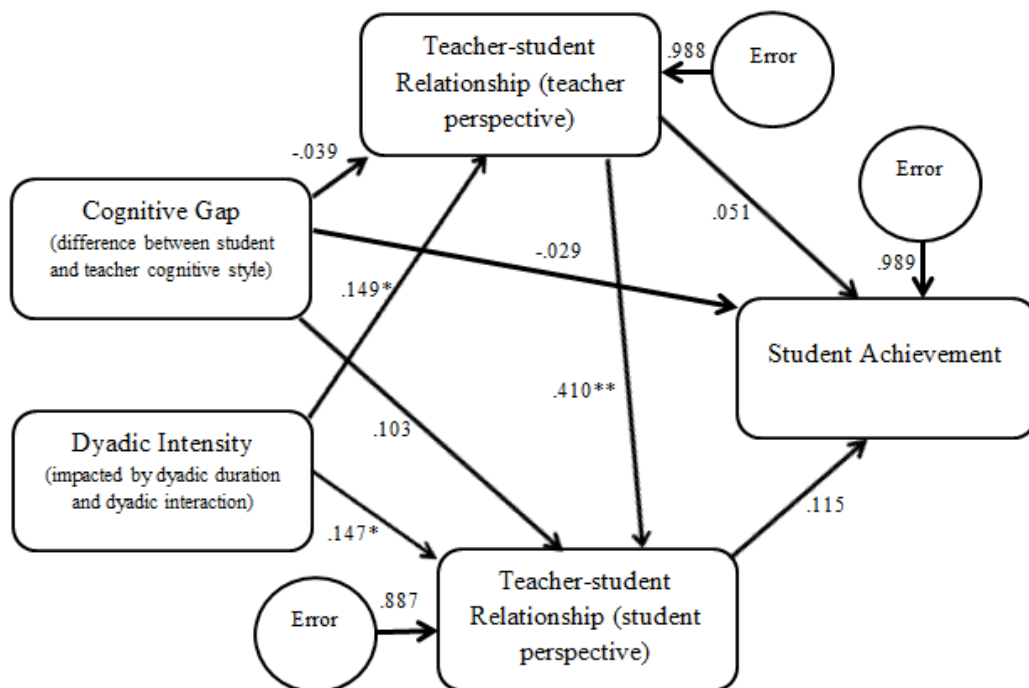


Figure 4.2. Solved model of the effects of cognitive gap, dyadic intensity, teacher LMX, and student LMX on student achievement (* $p < 0.05$; ** $p < 0.01$).

To determine the indirect effect of dyadic intensity on student LMX, the path from dyadic intensity to teacher LMX was multiplied times the path from teacher LMX to student LMX. To calculate the total effect of dyadic intensity on student LMX, the direct effect was added to the indirect effect. Table 4.8 shows the direct, indirect, and total effects of dyadic intensity and teacher LMX on student LMX.

Table 4.8

Standardized Direct, Indirect, and Total Effects of Dyadic Intensity and Teacher LMX on Student LMX.

Variable	Direct Effect	Indirect Effect	Total Effect
Teacher LMX	.410	-	.410
Dyadic Intensity	.147	.061	.208

Qualitative Strand Findings

Participants. Analogous to the quantitative strand, the qualitative strand of inquiry involved two subgroups of participants: teachers and students. Twelve participants were selected for the qualitative strand, four teachers and eight students. The teacher participants were selected using a typical case sampling strategy, where the four teachers whose LMX-SLX mean score was closest to the group mean score were chosen. The student participants were selected using intensity sampling to achieve comparability. Four students who reported an extremely high LMX-SLX score, in comparison with their peers, and four students who reported a low LMX-SLX score, in comparison with their peers, were selected.

Table 4.9 provides a description of the teacher participants. Each teacher participant was given a pseudonym to protect his or her identity, and the prefixes assigned to each pseudonym are not necessarily associated with the actual teacher participant's sex. Mr. Johnson has 19 years

of teaching experience. Ms. Williams has nine years of teaching experience. Ms. Davis has 29 years of teaching experience. Mr. Lewis is in his first year of teaching.

Table 4.9

Description of Qualitative Strand Teacher Participants (n=4).

Participant	Content Area	Teaching Experience
Mr. Johnson	Trade and Industrial	19 years
Ms. Williams	Health Occupations	9 years
Ms. Davis	Agriculture	29 years
Mr. Lewis	Health Occupations	1 years

Table 4.10 provides a description of the student participants. Each student participant was given a gender-neutral pseudonym to protect his or her identity. Masculine pronouns will be used to reference student participants. Logan is a 15-year-old student who is a member of DECA. Bailey is a 17-year-old student who is a member of FFA. Nat is a 15-year-old student who is a member of HOSA. Morgan is a 15-year-old student who is a member of FFA. Dakota is a 16-year-old student who is a member of HOSA. Cameron is an 18-year-old student and is not a member of any CTSO. Sidney is a 15-year-old student and is not a member of any CTSO. Devon is an 18-year-old student and is not a member of any CTSO.

Table 4.10

Description of Qualitative Strand Student Participants (n=8).

Participant	Age	CTSO Member
Higher LMX		
Logan	15	Yes
Bailey	17	Yes
Nat	15	Yes
Morgan	15	Yes
Lower LMX		
Dakota	16	Yes
Cameron	18	No
Sidney	15	No
Devon	18	No

Data analysis. The data gathered from in-depth, semi-structured interviews were analyzed and reduced inductively. This process began with initial coding of the interview transcripts and resulted in the emergence of themes.

Research Question 3: How do teachers and students describe the development of teacher-student dyadic relationships? From the qualitative data analysis, five themes emerged. The themes are used to organize the findings of the qualitative strand of research. The five themes are:

1. The way in which a teacher structures the classroom affects the quality of teacher-student relationships.
2. Teacher actions affect student motivation.
3. Teachers have a preference for students who excel academically and are well behaved.
4. The quality of teacher-student relationships improves with increased interaction.
5. High-quality teacher-student relationships are caring, trusting, and mutually respectful.

Each theme is presented individually; however, the themes are not independent of one another. Rather, the five themes collectively describe the development of teacher-student dyadic relationships.

Theme 1: The way in which a teacher structures the classroom affects the quality of teacher-student relationships. Because teaching provides a large degree of autonomy inside the walls of a classroom, teachers are responsible for structuring the learning environment. Structuring a classroom includes aesthetics, teaching methodology, environmental factors such as lighting and temperature, formats of assessment, classroom management strategies, and all other aspects of a classroom that help form the learning environment. When asked about how they foster relationships with students, teachers referenced various practices of classroom structure. Students spoke about how the classroom structure was perceived as well. Specifically, teachers and students focused on organization, teacher expectations, teacher enthusiasm, teaching methods and learning styles, and the mood of a classroom.

Ms. Williams explained, “I try to start out at the very beginning letting them understand what the rules are and what I expect out of them and what they should expect out of me” (I1 9–11). She continued: “I’m a pretty much rules person. I don’t bend too much. I like, you know, organization and roles, but not the point. I just want it structured and I want the kids, I think kids respond well for that” (I1 382–85). Indeed, some students enjoy structure and indicated that a structured classroom provides for a more enjoyable experience. As Nat said about one teacher:

She makes you respect her. Like it’s a very strict—I like boundaries. And she has those boundaries. And it makes for a very [sic] more structured class and that’s kind of like what I like. So I’ve enjoyed her class a lot this year. It’s gone by really fast, because it’s

fun, too (I2 28–31).

For Nat, an unstructured classroom made the class less desirable. He explained:

I don't like when teachers take disrespect from students. They let them do whatever.

And that takes attention away from the class. And that bothers me. And it kind of makes me not want to be in that classroom anymore. And it's boring, very, very boring. So I do not like those classes at all (I2 17–20).

Cameron agreed with Nat somewhat, in that he liked structure, but within reason. Cameron said:

I like a structure, like, I don't like—yes, I like structure. But that doesn't necessarily mean it has to be, like, strict, unreasonable. Like, one of my best teachers was [teacher's name]. And he had, he had structure. You came in, you did your work, but at the same time you could talk with him. You could have a discussion in class. You know? Stuff like that as long as you were on-topic. And that's really the best way, I think, to do it. Where you can kind of, you know, let students express themselves. It's not just the same writing out of the book every day. But you still have to go in there, get your work done, and learn something. And then I've had teachers that just didn't care and you don't learn anything. And I've had those that are just so strict, all anybody's thinking about is getting out of the class rather than actually learning from the class (I3 381–90).

Ms. Davis felt structure was related to whether students enjoy a teacher and his or her class as well. When explaining this logic, she said:

Some kids think I'm, you know, the best teacher that ever taught, and others think, well, I may not be that good. And the reason is, I think, for the difference, is we each have different personality types and one teacher may be a little firmer and a little stricter in a completely structured environment that a particular kid would be drawn to, whereas

another kid likes to laugh every once in a while and see humor in things and those types of things (I4 171–76).

Ms. Williams agreed with Ms. Davis that some students have a greater preference for rules and structure than others, and described it as surprising. She explained, “Sometimes, by providing the rules and being very stern, it almost, they almost respond to it differently than I would have anticipated” (I1 53–54). For Morgan, though, a more laid back classroom was preferable. When describing a teacher with whom he had a high-quality relationship, Morgan said: “He’s just more relaxed than some of my teachers” (I5 18–19).

Related to structure is student academic accountability. Teachers set the academic tone in their classrooms as well by communicating expectations to students. Mr. Johnson said, “I push them even when they don’t want to be pushed to succeed and do well” (I6 9–10). Mr. Johnson supported his demanding nature, saying, “I have a pretty high expectation of their performance” (I6 8). He is not alone. Ms. Williams talked about high expectations as an integral part of her classroom as well, but wasn’t sure of how some students perceived her expectations. She said that in some cases it might be detrimental to teacher-student relationships: “I guess some students don’t like me because, I mean, I require a lot” (I1 34–35). While some students may not appreciate high expectations, others view this as helping them. Morgan described a teacher with whom his relationship is good by saying, “He helps me. He just pushes me to do better” (I5 34). Of the same teacher, Bailey explained, “He’s very, you know, he’s very pushing [sic] to make sure that you’re where you need to be. He will walk around everyone’s desk and make sure you’re doing what you need to be doing” (I7 202–04). Bailey continued, “I mean, I think that he, with everyone he, he kind of wants to—I don’t think he wants to see anybody have a lackluster performance in his class. He really wants everyone to do well” (I7 204–06).

While having high expectations for students can foster good relationships, students also appreciated when a teacher was enthusiastic about the subject being taught. Dakota explained that having an energetic teacher was more enjoyable. In talking about a teacher he likes, Dakota said, “She always kept you like focused with the class, and like it was, I don’t know if you’d call it like energized but, you know, she just made it fun so you could remember everything” (I8 25–27). Bailey agreed and said about another teacher, “He gets you excited about the class” (I7 98). Sidney described a third teacher and how the mood she creates in her classroom impacts the entire class:

I thought the class was going to be pretty hard and difficult. But after awhile, you know, she brought, as I said, a mood into the room that would just, I guess, spark a fire in not only me, but everybody and make everybody want to try to do work (I9 101–03).

Alongside the notion of everyone working, as mentioned in Sidney’s quote, was the consideration of catering to the needs of all students. Though it can be difficult, varying teaching methods to adapt to different learning styles was described as being an effective method of building relationships. Nat said, “I like most of my teachers, but some of them, I don’t like their teaching style” (I2 11–12). Students did not enjoy a “one size fits all” approach to teaching. As Bailey explained:

Some of the other teachers I’ve had are not really, like they think that there’s one way to understand everything. It’s their way. And there’s no other way around it. You have to conform to what they need you to be (I7 49–51).

Ms. Williams acknowledged that students learn in different ways and at different paces, but found the struggle of meeting the needs of all students in her classes daunting. As she described:

I think as a teacher, one of the biggest struggles is having your A student who makes it

very easily and doesn't have to study, and your student who just barely gets by and how do you adjust your level of teaching so that the high level is not bored and the lower level is successful? And so that they're both successful. And I guess it's a challenge. That's probably one of the biggest challenges (I1 179–83).

Indeed, keeping all students on pace and engaged is tough, but students appreciated when teachers recognized their needs and adjusted in teaching situations. In talking about this, Sidney provided an anecdote of how one of his teachers does this: “Say one of the computers doesn't work, she'll send us to another classroom to, you know, get the paper done” (I9 190–91). From the teacher perspective, Mr. Lewis told of a student who was having a hard time grasping concepts and explained the approach he used to ensure student success:

We were doing medical terminology. So we were doing oophorectomy, hysterectomy, cardiology, radiology. Take those words apart. What do they mean? Skills that she's never learned before. And then I found out that she couldn't read past a second grade level. I sat down with her. I figured out a way she could have her test read to her. We worked it out. I sat down with her mother. We talked it out. She's making a B in my class now. And she said, “[teacher's name], I have never made a B” (I10 390–95).

Mr. Lewis's illustration pointed to the importance of recognizing the diversity of learners in a classroom. He continued:

I think some students get more interested in application than they do just knowledge. And for some students, sitting in a desk watching a PowerPoint for 90 minutes is not happening. For some of them, they'll sit there and take notes. For others, in 10 minutes they're distracted (I10 213–16).

Mr. Johnson acknowledged the value of teaching to a variety of learning styles as well. An

approach he uses is relating classroom content to student interests:

Try to be aware of things that they're interested in during the class. Using sports, hobbies, or pastimes as teachable moments in drafting. Relating things outside the textbook to the class. Sharing things out of my experiences with them outside of the textbook (I6 31–33).

Using a variety of approaches to teach students may go a long way in building rapport with them and fostering high-quality teacher-student relationships; however, a student may never reach a high-quality relationship with a teacher if he or she does not feel welcome in a class. Ms. Williams summed up this notion by saying:

So allowing the student a place where they [sic] can come in and be successful, not feel excluded, and be a part of a room is, I hope, what kind of environment that I create in the classroom. And what I would hope other teachers would, you know, in their classrooms as well (I1 386–89).

Ms. Davis agreed with Ms. Williams's sentiment, saying, "I try to make sure that every student feels welcome and invited" (I4 109).

Theme 2: Teacher actions affect student motivation. While teachers are leaders and their actions set the pace for the development of teacher-student relationships, students must have a desire for the relationship to develop as well, or the teacher-student relationship will never prosper. Teachers and students both explained various factors that motivate students to engage in the class, interact with the teacher, and build the relationship. Teachers acknowledged that some students were self-motivated. In talking about a student with whom she has a high-quality relationship, Ms. Williams said, "She's more of a self—how would you describe it. She motivates. I mean, she's very self-motivated" (I1 280–81). Ms. Davis, however, pointed out

that not all students have such intrinsic drive. She posited, “Some students have been dropping out since about fourth grade. And they’re just waiting until they get old enough that it can become legal and, you know, they’re not going to connect with anybody, you know, here” (I4 189–92). Students also acknowledged that not all of their peers wanted to be at school, which does not make a teacher’s job easy. Dakota said, “I mean, if the student doesn’t want to be there at all, you know, and acting out all the time, I mean it’s kind of hard for a teacher” (I8 403–04). Devon explained that a student’s motivation was an antecedent for whether or not a high quality-relationship with a teacher, from the student perspective, formed: “If they don’t care about how their relationships are with other people, then they’re not going to be motivated to have a relationship with anybody. You know?” (I11 270–72). While internal student motivation may impact the degree to which students initially engage in a classroom, it was evident that teacher actions were a stronger determinant of student motivation.

Some teachers felt it was their responsibility to provide students with a reason or desire to come to school. Mr. Johnson specifically spoke about the value of classes, holding that if students did not find value in what was being taught, they would not be motivated. He said:

I say a lot of stuff that, if you covered it line-by-line textbook, they wouldn't see the value in it, and they wouldn't get involved. It needs to be broadened out to specific things they're interested in, whether it's a kid who is restoring cars or a kid who is designing traps that traps animals in the fall for a side business (I6 38–41).

When students did not find value in material being presented, they were less motivated. From the student perspective, Cameron agreed that lack of relevance in subject matter or content decreased his attention in class, saying, “It varies from class to class. Sometimes I already know it. Other times I don’t care as much because I don’t think I’m going to use it in my life” (I3 173–

74). Cameron further described his outlook on high school, explaining that he could accomplish his career goals without maintaining a strong academic record:

My grades have pretty much declined a little bit over time because my sophomore year I decided I wasn't going to college. I was going to join the military. So I decided that, you know, you only go to high school once. I'm going to focus less on getting into college and more on enjoying these years (I3 17–20).

Cameron's sentiments also impact the relationship with one of his teachers. In describing his relationship with one teacher, he addressed the lack of value he found in the course, and the corresponding effect on his motivation in that class. Cameron said, "We both know I don't need the class to graduate. I mean, if he asks me to do something, I'll do it. But I don't really go out of my way to work for him, you know" (I3 31–33). He continued, saying, "I'm smart enough. I mean, I'll pass the final. So I'll sleep a lot" (I3 12–13).

While student apathy may be a challenge for high school teachers, Ms. Davis takes a more proactive approach to fostering high quality relationships and communicating the value of her class to students. She explained:

I'm trying to teach my kids that they're in the right class. That they're taking the best—if it's [CTE course] , they're taking the best elective at [name of school] and here's why. You know? We're not in the classroom every single day, and a lot of what we're studying in terms of communication skills will help you in all careers, and those types of things I try to share the positives of our program and how it can benefit them and let them know, you know, that my partner and I, my teaching partner and I are willing to go above and beyond the call of duty to provide extra opportunities through our youth organization, the FFA. That may include travel and prize money and recognition and

awards and building self-confidence and self-esteem and those kinds of things (I4 152–56, 110–14).

Ms. Davis’s approach to motivating students may be effective. Many students explained that they did things to please a teacher or make the teacher happy. Bailey talked specifically about membership in the FFA:

When I joined, I realized that this was really changing a lot of things about me, and that [teacher’s name] was the one that, you know, pushed me towards, told me this would be good for me, I could do this, I can do that. And it can really, you know, help me with everything. And I think that, because of that, I felt like I kind of owed to him to be a good student because he helped me join the [CTSO] (I7 157–61).

Bailey was not alone in this mindset. When Morgan spoke about one of his teachers, he said, “He’s just really nice to you and you want to do good in his class, and you want him to be proud of you and stuff like that” (I5 137–38). Nat added, “Personally, I try to impress [teacher’s name] just because I like her so much. I want her to have the same feelings about me. And so I do try to impress her by working harder” (I2 208–10). When asked if other students felt the same way, Nat described an example of how other students want to please the same teacher:

Like, my friends that I have, we’re not rude to each other. That’s obvious. You’re not going to do that. But [teacher’s name] doesn’t allow that. And so becoming friends with them and letting you interact makes [teacher’s name] proud of you, because she sees that you are trying to get along with your classmates, because that’s very important to her is [sic] if your classmates get along, because it bothers her if we don’t get along. Like, it upsets her, because she feels like it’s her fault. And so everybody gets along, not just because of [teacher’s name], but because we want to. It’s such an easy class and it’s just

a fun class and there's no sense to be, like, just, yeah. So everybody gets along. And [teacher's name] likes that. So us getting along impresses her and so everybody wants to impress her, because they like her so much (I2 290–99).

Sidney told about another teacher where the situation was similar, explaining, “Everybody wants to try to do work for not only themselves, but [teacher's name] to try to make her happy” (I9 103–04). Students explained that, in teachers' classes with whom they had a high-quality relationship, they worked harder and understood the material better. As Bailey put it:

I think that with him, I just, I get the stuff and I want to understand the stuff because I can see that he wants me, he really wants me to understand everything that he's, he's talking about. And I think that I can see his, his drive to make sure we get what we need to get. So I kind of put more work into making sure that I make 100s in his class. And I think I do that with other classes, but I mean, I guess I feel like I don't want to, I'm not as motivated to achieve as high as I can get in other classes, because I feel like the teacher, it won't matter to them whether I do well or not. And I think that to [teacher's name] it does (I7 182–89).

Nat held a similar position:

[Teacher's name], because of that relationship, I want to make good grades in that class. But in other ones, as long as I get by with, like, an okay grade, then I'm okay with that because I don't really want to spend extra time with them and try to bring my grade up, because I don't like being around them (I2 327–31).

In speaking about how a specific teacher impacts his motivation, Cameron said, “I think if he was a math teacher, I would do really well in that class. Because if I like a teacher, I'm going to try to please them more than if I don't, I'm going to try to make a 70” (I3 78–80). Nat provided

a similar illustration:

That's my highest average is [teacher's name] class. I'm making a 99. But in my other classes, I do have—because academic stuff does come easier to me than other people, I do still make higher grades, but it's more of a struggle. In, like, math and Spanish and all that stuff I have to work ten times harder just to make the grades that I'm making because, I mean, I do have a good relationship with them, but it's nothing like [teacher's name]. She just has a different personality. She's more calm and she's more—I don't know how to explain it. But some teachers, like one of my teachers, I don't like her. And so I'm not doing so good in that class. And that's not good at all (I2 169–76).

Bailey summed up his position, saying, “I think that if you enjoy being around your teacher, you want to do well for them. You don't want to let them down” (I7 348–49).

Theme 3: Teachers have a preference for students who excel academically and are well behaved. All teachers indicated a preference for treating students with fairness and equity; however, some found this difficult, tending to prefer working with students who were academically inclined. Ms. Davis really enjoys the company of students with whom she has a high-quality relationship. In describing their interactions, she said:

There are students that every single day they bring a good attitude. And every single day they're giving you their best effort. And every single day they're trying to do what they can to please you, you know, as a teacher, and to do their very best and it's hard to have a day, you know, with them that you don't feel pretty good about them being there (I4 207–11).

Ms. Williams expressed a similar position:

I have students who are very passionate about what they do and work really hard and study really hard and that makes me really excited. So if that makes them a—I mean, I try not to show favoritism towards students, but it makes me very happy when students are doing the right way (I1 172–75).

Certainly, having students in class who give their best effort makes a teacher’s job easier. Ms. Williams talked about a high-achieving student who needed minimal help with assignments, and when asked how much assistance and direction she provided to that student, Ms. Williams said, “Little instruction as far as she knows that I support her, but not a lot of—I don’t have to tell her everything to do. You know, if I give her an assignment, she’s good with it” (I1 281–83). Mr. Lewis also enjoys students who have a propensity for high achievement. He said, “I think there are some students that just sort of shine, you know, and they, you can see that they want to do this and that they’re interested in learning” (I10 34–36). He continued, “I think it’s easier to work with those that it clicks easy I think with some students that you see a desire to learn, it’s just natural for you to try to help them excel” (I10 181, 31–32).

When asked about their relationships with teachers, students felt some favoritism from teachers because of their behavior and academic performance. Logan felt that he and his friends were the teacher’s pets in one class. When asked how they earned that self-proclaimed title, he said:

Well, we do our work and we always, like if she needs something done, we ask her how we can help, or if she needs us to help her with anything, we just jump right on it, so we just try to, like help her out the best we can, and do all of our work, and actually listen to her. And she just, I guess, favors us more (I12 178–81).

Dakota thought that most of her teachers interacted better with her than other students in her

class. When asked why, she said, “Well, I do make good grades. And some kids that don’t, they don’t really even want to try with them” (I8 129–30). Morgan provided a similar story; he said, “I think they interact with me better, because I actually pay attention and work for them. And I think in return they treat you better if you do that” (I5 71–72). Talking specifically about one teacher, Morgan said, “I get good grades. So he is really just proud of me just to do my best and always ask questions” (I5 115–16).

Students thought that teachers wanted to be fair, but generally felt that teachers showed favoritism to students who were well behaved and did their class work. Logan described one teacher specifically, saying, “She is generally the same with everyone, but I mean, if you’re more willing to talk to her and you’re more willing to do all your work and stuff, generally, you’ll be the one that she likes” (I12 193–95). In an afterthought, he added, “I’m not saying that she dislikes any of the students, but . . .” (I12 195). Bailey hesitated to admit that one of his teachers gave him preferential treatment, but rationalized:

He’s more inclined to be more understanding of someone that he knows is responsible, does what they do. I mean, I’ve been with him for three years, so I think that he—I mean, I don’t want to say he gives me special attention. But I think that he would be more inclined to understand if something was going on with me (I7 211–14).

Collectively, students pointed to academic performance and the seriousness with which students undertook a class as a primary means by which a preferential treatment could be gained and a high-quality relationship could be nurtured. Bailey explained his position:

There’s a kid in every class that doesn’t want to be there, doesn’t care, and won’t try at all. And I think that teachers can, can spot those people and sometimes pay them more attention because they, they really need the help or focus on other students who are more

serious about the class (I7 88–91).

Later, Bailey said, “I think that you, he maybe is more inclined to some students because of their performance in his class” (I7 253–54). Nat told a similar story:

If you do make good grades and you show that you’re trying, then she shows a lot more consideration for you than she would someone who just blows off tests and doesn’t really care about what she’s doing, because that’s a waste of her time. If you don’t care, then she shouldn’t. So if you do good grades, she kind of, she kind of focuses more on you, because she knows that you’re taking it in and that you’re actually going to use it on your test, because some people just don’t, they just don’t care (I2 131–37).

When asked if all students had the opportunity to develop high-quality relationships with their teachers, Devon said, “All of them except the ones who don’t try” (I11 244).

Theme 4: The quality of teacher-student relationships improves with increased interaction. Both teachers and students describe the first encounter with one another as a platform on which first impressions are formed, explaining that as the duration of the relationship increase, they are able to get to know one another better. Both participant groups spoke to how the frequency of their interactions aided in the development of the relations in and out of the classroom. In regard to the first time she takes a class with a teacher, Dakota said:

I guess as the year goes on you get to know them a little bit better and, you know, you kind of talk to them more and more about different stuff. So, you know, like I guess the better the relationship the more you talk to them, the more you’ll open up and stuff (I8 118–20).

Cameron described how the relationship with one of his teachers evolved during the course of a

semester, saying, “I’ve just gotten to know him better and I learned he was a pretty laid-back guy. He’s pretty cool and I could just, you know, joke around, kid with him more. I actually talk to him” (I3 187–89). When asked what specific actions facilitated the development of their relationship, he added, “It just kind of came with time. It wasn’t necessarily a one big event that changed it” (I3 204–05). When thinking about classmates who are experiencing a teacher of his for the first time, Bailey observed that his teacher works at developing relationships with all students. He recalled his first interactions with the teacher during his freshman year:

When I look at him interacting with them, it reminds me of what he was like my freshman year. I mean, he’s just very making sure everything is right. He’s not letting them go off on their own quite as much as maybe I would, because he knows me better.

But I mean, I think he’s just trying to get to that place with everybody (I7 284–87).

When asked how the relationship was different now than when he was a freshman, Bailey said, “I feel like with [teacher’s name], he—because I’ve been with him so long and because I, he sees that I have the potential to do great things” (I7 67–68). Teachers pointed to how taking multiple courses aids in developing high-quality relationships with teachers as well. Ms. Williams said, “I guess with my senior-level courses, we have a closer relationship because we’ve been together for four years, versus my freshmen and sophomores, who I don’t know that well and who don’t know me as well” (I1 54–57). Ms. Davis added, “Many of my students will take multiple courses, you know, with me” (I4 181).

In addition to taking multiple classes, both teachers and students pointed to out-of-class interactions as a means of building a higher-quality relationship with one another. Some of the outside relationships occurred before students were in high school. Logan spoke about a teacher with whom his relationship is strong. He explained, “My mom has always been a good friend of

hers, so I've known her for quite a while. And she's always been, you know, really nice, and always helps you if you need it" (I12 31–32). Other students mentioned staying after school to get help as an opportunity to develop the relationship. Nat provided this illustration:

She does one-on-one a lot, which helps. And it makes it, and she does after school tutoring for her class, too. So that combined kind of makes her more—she's more, she interacts with us more than the other teachers do. Like, she'll talk to you about the class, instead of just teaching you and then you leaving and that being the end of it (I2 53–57).

Much of the out of class interactions described by teachers and students occurred in the context of a career and technical student organization (CTSO). Ms. Davis, who is an [CTSO] advisor, gave her perspective on how CTSOs facilitate high-quality relationships. She said, "The students that are actively involved in our youth organization, the FFA, obviously are going to spend more time beyond the class time than the kids who are marginally involved or not at all" (I4 128–30). When asked how that impacted relationships with students, she continued:

The ones that get actively involved in our youth organization and they're taking what we're learning in the classroom and competing and showing that they know that and taking that skill to a whole other level through a competition, or by going to a camp in the summer, or a leadership conference, or a national convention, or a machinery show trip or whatever. I think you're naturally going to build a stronger rapport with those students because they were with you at a time that we weren't having to cram for a test. We were learning and enjoying and having fun together and looking after one another and that kind of thing. And you tend to build a little more closeness, you know, with those kids over time. Not so much that from a teacher's perspective that you get overly attached to that

particular kid, but that kid becomes more comfortable with you as you travel and have those, and see you outside the school setting and that kind of thing (I4 132–42).

Ms. Williams had a similar position on the topic, adding, “I do have more interaction with my HOSA, and we’ve traveled all over. We’ve traveled to Dallas and California” (I1 207–08).

Students agreed that participation in a CTSO helped build a relationship with their teachers.

Dakota said, “If you do [CTSO] and, like the more you get to know her, but if you don’t, it’s like just class, and you leave” (I8 257–58). Sidney spoke about how being a member of [CTSO]

allowed students to get to know a teacher outside of class. He said, “Before they may have participated in [CTSO] and may have, like, got to know her better than some people, where some people have taken her class that’s new” (I9 247–49). Bailey talked about one of the [CTE

course] teachers, holding that students who were involved with [CTSO] had a better relationship with the teacher. Bailey said, “I think that they just, they spend more time with him and I think

that that in turn makes them have a better relationship with him” (I7 237–38). Nat’s testimony of how being a member of [CTSO] aided in the relationship between her and the teacher also

supports the notion that CTSOs foster high-quality relationships between teachers and students:

She talked me into doing HOSA, and so I stayed after school with her a lot. And it was, like, one-on-one, because not many people can stay after school. And so that kind of got a lot better between us. And it got to where she enjoyed being around me, and I enjoyed being around her. And so after awhile it just got to where that class came really easy to me, because she’s easier to listen to. Like, she doesn’t bore you to death. So I just—and staying after school with her and going to competitions and her, talking to her like that, it really made me like her a lot more (I2 119–25).

Theme 5: High-quality teacher-student relationships are caring, trusting, and mutually respectful. Teachers and students alike enjoyed talking about high-quality teacher-student relationships and used a variety of descriptive terms to portray good relationships. In high-quality relationships, teachers want students to succeed and provide them with opportunities for success. Ms. Davis noted that success was something she wanted for all of her students. When asked how she communicated this to students, she said, “Try to encourage them, you know, to become all they can become each and every day” (I4 123–24). Mr. Johnson spoke about the importance of student achievement as well: “I make sure that they have every opportunity to succeed” (I6 8–9). When asked how this was carried out in his class, he explained, “It’s just giving them multiple opportunities on tasks, giving them a chance if they do something poorly to go back and revisit it and get that score up” (I6 14–16). Nat told of another teacher who adopts this same position, indicating, “Some people get bad grades, but [teacher’s name] will let you rewrite and make up that test to make your grade go higher, and then she works with them on it and they learn better, so their grade comes up” (I2 303–06). About the same teacher, Nat added:

[Teacher’s name] won’t go on unless everybody understands it. And so we do get behind, but then we catch back up because there’s, somewhere she just makes it easy to where everybody gets it all at once. And most teachers just keep going and they move faster and faster and they won’t go back for one student. So the relationship is definitely different And she does one-on-one a lot, which helps. And it makes it, and she does after school tutoring for her class, too. So that combined kind of makes her more—she’s more, she interacts with us more than the other teachers do. Like, she’ll talk to you about the class, instead of just teaching you and then you leaving and that being the end of it.

(I2 252–56, 53–57).

Logan spoke of another teacher who also wants all of her students to succeed. He said, “If you’re making a low grade and that bums you out, she really does try to help and see what she can do to help you raise your grade” (I12 50–51). From the student perspective, being committed to student success is important. He explained:

I think that more teachers could care and pay attention to what the student’s actually asking, and like if they don’t get something, actually try to help them, explain it, and try to give them every opportunity, if they’re really trying, to get their grade up or whatever. And try to be more interactive with the students instead of just trying to get whatever’s in the curriculum done (I12 308–12).

Students noted that teachers do not only provide assistance after a student does poorly on an assignment; rather, many teachers are proactive at checking for understanding during instructional time. Sidney described a teacher who wants to ensure that all students understand assignments:

She tries to help them, I guess, more than other teachers. Like other teachers would tell you to do an assignment and just go back to their desk. But she interacts. She’s, like, you know, “Do you know this? Do you need help?” You know? “Do you need someone else to help you?” (I9 187–90).

Bailey described a similar experience with one of his teachers:

[Teacher’s name] will just come up to me and say, “Do you got [sic] everything you’re doing right or you’re good? Do you need any questions? I can help you. You can come after school. Do whatever you need. I can, I can help you. Come up to lunch whenever you need help, whenever you need it” (I7 33–37).

Bailey continued talking about his teacher's dedication to him and other students:

I mean, just the dedication that he puts into making sure that I'm where I need to be. He just makes, he doesn't care. Like he'll stay after school. He will help me whenever I need help. I just think he goes above and beyond when it comes to making sure that students are happy with his class and know the material and stuff like that (I7 166–69).

In addition to helping students succeed, teachers also stressed the importance of providing opportunities for students to building high-quality relationships. Ms. Williams recalled an overnight trip with students:

I'll never forget her opening the door and she gasped as she opened the door and she was like, "[Teacher's name], this is beautiful." And I was like, that's worth it. You know, all the long hours for the fundraising and whatever. And she has just, you know, that's it. And that was when I had first started in taking kids. And so as hard as it is, you know, we don't get paid the extra hours. And in the summer, a week in my summer goes to national competitions, which we're out of school. So a week away from my family. But I love it. And being able to provide kids that opportunity they wouldn't normally get (I1 222–29).

Ms. Davis echoed the views of Ms. Williams, saying, "I've tried to work hard to provide extra opportunities. Spent countless hours trying to ensure that they had the opportunity to compete and travel and gain some of those positive life experiences that I had" (I4 95–98).

In discussing their relationships, teachers and students pointed that mutual respect was quintessential to building high-quality teacher-student relationships. Ms. Davis said, "I think for the most part, the overwhelming majority of my students and I have had an outstanding rapport. I try to treat them with dignity and respect" (I4 91–93). She added, "I think kids realize that I'm

fair and treat them the way they'd like to be treated" (I4 163–64). As Mr. Johnson explained, respect includes listening to student perspectives and opinions and valuing their input. Mr. Johnson teaches much of his classes through computers and regularly holds classroom meetings. When asked about the purpose of classroom meetings, he said:

I want their—it's not a matter of discerning information. I can do that through their notes on the Web site. I want to know, do you want study packets? Do you want practice tests? Do you want to play jeopardy? How do you want to study? I want to get feedback from that group (I6 162–65).

Mr. Johnson places high value in the interests of his students. When asked about the most effective way to build rapport with students, he said, "Just listen to what they're talking about, pay attention to what they're talking about" (I6 352). Ms. Williams feels mutual respect is important as well, and explained how she models this in her classroom:

You know, addressing them when they ask questions, "Yes, ma'am," and "No, ma'am," because I want them to reciprocate that and have the same response addressed to me. So I hope I'm respectful to the students and in turn they are respectful towards me (I1 21–24).

Indeed, students notice and appreciate when teachers respect them. Morgan felt that respect was important, but placed that responsibility on students, saying, "Respect them and they'll respect you" (I5 327). Cameron explained that he respects those teachers with whom he has high-quality relationships: "I like them and I like their class, so therefore I kind of have a respect for them. And when they tell me to do something, I just do it" (I3 112–13). Cameron, however, does not like when teachers treat students inequitably, and specifically provided this anecdote:

Letting students get by with stuff that other students cannot when you obviously know

that they're both doing it. Texting, copying assignments were two big ones that got me or got other people in the class throughout the years. I don't know. This goes back to English. I guess I remember it more because I was not one of her favorites. Like, not even close. And we had a lot of open-ended questions on our test. And some little student that was a little, you know, kiss-ass would write something down that didn't make any sense and she'd mark it right. And someone would just be like a few words or a few details off, whole thing wrong. That was always, that always irked me (I3 333–40).

When asked what advice he would give to teachers who wanted to build high-quality relationships with students, Cameron said, "I would say, remember being our age. And I would say, be fair. Those are the two things I would say to every teacher I've ever had" (I3 322–23).

Bailey talked about a teacher who makes every student feel respected and appreciated:

He just makes you feel like you're doing everything right, like you're in the right place where you're supposed to be, and that he wants you—he makes you feel, like, like I guess it's kind of hard for teachers to talk to one individual student when there's a class of 25 or whatever people. But he kind of personalizes it for everybody and makes you feel like you're the person for this job, or you are special out of this whole classroom because you can do this, I think (I7 13–18).

In addition to respecting one another, teachers and students also described trust as a characteristic of high-quality relationships. Teachers frequently demonstrated trust in students by asking for their help or giving them additional responsibilities. Mr. Johnson said, "If I see a student that's starting to get a mastery of a concept, I tend to enforce that by asking if they'll help a student that's not got mastery of the concept" (I6 138–39). In classes of mixed abilities, Mr. Johnson said, "The three-level students know certain things more fluidly than the two-level

students or sometimes I'll just have the three-level students be the coach to a couple of two-level students on some task" (I6 208–10). Other teachers demonstrate trust in students in the same manner. Bailey described how one of his teachers would ask for his help:

I think he could just come up to me and say, "We've got this student here that's, that needs some help. Can you go over there and maybe help him draw this landscape plan, or help do these reads or just make sure that they, they know that we want to be here?" And I don't know. I think he's just more trusting of me now than he was then (I7 135–39).

In her upper level [CTE course] class, Ms. Williams takes students to a nursing home for hands-on learning experiences. In describing this, she said, "They have to be honest with me and trustworthy" (I1 63). Students value a teacher who is trustworthy as well. Nat described a trusting, high-quality relationship with one of his teachers:

[Teacher's name] is more of the person that, she's more of, like, she is a stricter person. So if you told her something, she could keep it to herself. She's the type of person that you can confide in. And my other teachers, I really don't have that kind of relationship with them (I2 36–39).

In addition to respect and trust, teachers and students repeatedly pointed out that high-quality relationships between teachers and students were not possible unless the teacher genuinely showed care and concern for the student. Mr. Lewis said, "I think that people naturally want to develop relationships with people they think care about them" (I10 356–57). He added, "If they see me as somebody that cares about them and has an interest in them, I think that it would be natural for you want to gravitate to that person and develop a, you know, better relationship with them" (I0 357–59). Cameron agreed that a caring teacher was desirable:

If I can tell they're going to care and try to help me out, then I'm going to try to do my best because I know with that potential I have really good, I have potential to do really well in that class. But if it's someone who just doesn't care or doesn't like me, then I'm just going to do enough to pass so I can get out of there (I3 142–46).

Logan said, “I wish a lot more teachers were like [teacher's name] so they could actually care about what you're doing and try to help you with whatever you need” (I12 301–02). He added, “Usually those are the best teachers, the ones that actually care” (I12 69–70).

As described by both participant groups, care and concern from the teacher to the student can manifest in a variety of ways. When asked to describe a teacher with whom they had a high-quality relationship, students provided many different descriptions. Bailey said, “He doesn't just ask me about his class. He'll ask me how other classes are doing, if I can, if he could help me in any other classes or with anything else I'm dealing with” (I7 70–72). After reflecting, Bailey added, “I think when he first starts, he wants to make sure that you know that he's a, he'll be there for you if you need him. He'll help you with anything” (I7 117–18). Devon described a high-quality relationship with one of his teachers, saying, “It's basically like family in that classroom. If you need some help with something, she'll help you. If you need to talk, she'll talk. And just talking to her is a pleasure because she's funny” (I11 23–26). Morgan explained, “He's a great teacher. He just helps you anytime you need help and answering questions you've got. He's just a good teacher” (I5 11–12). Logan simply said, “I know that she's always going to be there to help me” (I12 116–17). About his teacher, Dakota said, “Well, like she'll be open to talk to you about anything. So I mean, she's there for you when you want to talk to her” (I8 65–66).

Undoubtedly, teachers and students felt that being a caring teacher was foundational to

building relationships. When asked why, Mr. Lewis said, “Because they’ve told me that some teachers they really don’t feel care about them” (I10 229). He added, “I have a good relationship with my students, and they know that I genuinely care about them” (I10 24–25). Nat provided this stance:

If teachers would just take the time and actually talk to their students and get to know them, because a lot of them don’t care because we only have them for 90 days. So it’s a very quick transaction. And they don’t care. And so if teachers would just take the time after school to help and stop and slow down in class and help one-on-one, then I think it would help a lot (I2 352–56).

Mixed method findings.

Research Question 4: How do the descriptions of dyadic relationship development offered by teachers and students converge with quantitative results? Research question four calls for an investigation of how results from the quantitative strand and the qualitative strand agree or disagree with one another for the purpose of better understanding the development of teacher-student relationships. Table 4.11 provides the scores of student participants in the qualitative strand. Considering these scores in regard to statements made by participants during interviews is helpful.

Table 4.11

Quantitative Description of Qualitative Strand Student Participants (n=8)

Participant	Student KAI	Teacher KAI	Cognitive Gap	Dyadic Intensity	Student LMX	Teacher LMX	Student Achievement
Higher LMX							
Logan	96	79	17	24	50	50	80
Bailey	76	98	22	30	50	40	90
Nat	68	87	19	19	50	41	97
Morgan	80	99	19	3	50	40	96
Lower LMX							
Dakota	105	87	18	23	35	35	94
Cameron	96	110	14	5	34	39	90
Sidney	100	99	1	2	35	29	85
Devon	123	90	33	2	30	29	91

Note. KAI scores can range from 32-160. Cognitive gap scores are the difference between Teacher KAI and Student KAI and can range from 0-128. Dyadic intensity scores have a lower limit of 2 and do not have an identified upper limit. LMX scores can range from 10-50. Student achievement scores can range from 0-100. Missing data were excluded.

Scores on the LMX-SLX represent how one member in a teacher-student dyad perceives the relationship with the other member. Table 4.11 shows the largest gap between a student's perception of the relationship and his teacher's perception was with Morgan. Morgan scored his relationship with his teacher a 50; however, his teacher scored the relationship a 40. Scores of 40-50 are in the upper 25% of possible score ranges, thus reflecting a high-quality relationship. The student LMX scores are of primary interest in consideration of the qualitative data because students were asked specifically about the quality of the relationship with their CTE teacher. Even the scores of students who make up the lower LMX participant group are still in the upper 50% of possible score ranges. It is possible that students in the lower LMX participant group are in the acquaintance phase of the leadership-making model. Some relationships may advance

to the acquaintance phase and then remain stagnant due to the increments at which leaders and members are able to engage and influence one another (Graen & Uhl-Bien, 1995). Since three of the four participants in the lower LMX participant group are not involved in the CTSO that corresponds with their CTE class, the frequency of dyadic interaction may not have been high enough to promote advancement to the third phase.

Attention should also be given to the cognitive gap scores. A-I literature gives perspective to various gaps: “people having scores less than 10 apart are regarded as having ‘same’ score, between 10 and 19 as ‘similar’ scores and 20 or more apart as having ‘different’ scores” (Kirton, 2003, p. 67). According to Kirton (2003), it is very unlikely that less than 10 points difference in scores will be noticed; however, over time, 10 points difference or more will certainly be noticed. A cognitive gap of 20 points between two people is very noticeable and can potentially lead to communication breakdowns if not managed, and a gap of 30 to 40 points requires constant monitoring to prevent friction and circumvent misunderstanding between people (Kirton, 2003). Considering this, it could be expected that Bailey and Devon would have a lower student LMX and teacher LMX score; however, this is not the case. In fact, when asked about his relationship with his CTE teacher, Bailey said, “He’s one of my favorite teachers I’ve ever had. Not just in high school, but I mean ever really” (I7 23–24). About the relationship with his CTE teacher, Devon said, “I think it’s actually pretty good. We talk to each other. If you need some help with something, she’ll help you. If you need to talk, she’ll talk” (I11 23–25). While this response does not indicate a low-quality relationship, it certainly does not point to a high-quality relationship either, which is in line with the acquaintance phase of the leadership-making model.

For the most part, the descriptions of the teacher-student relationships offered by students in the qualitative participant group pointed to relationships of reasonably good quality. Of much interest to the researcher, however, was that teachers had a preference for students who performed well academically. Research question two asked, “What are the effects of cognitive gap, teacher LMX, and student LMX on student achievement?” While the path coefficients from dyadic intensity to teacher LMX, dyadic intensity to student LMX, and teacher LMX to Student LMX were statistically significant in the original model, none of the paths to student achievement were statistically significant. None of the variables in the originally proposed path model accounted for students’ academic ability, though. Teddlie and Tashakkori (2009) explain that “in sequential MM studies, the addition of QUAL or QUAN strands improves one’s understanding of the phenomenon and answers the research questions by suggesting modifications in questions or design, by providing new hypotheses, or by exploring the reasons and meanings behind the findings of a previous strand” (p. 286). The demographic survey administered to students during the quantitative data collection captured a measure of students’ academic ability. Students were asked to provide their un-weighted grade point average (GPA). Table 4.12 provides the mean, standard deviation, minimum, and maximum score for student GPA. In the present study, the addition of the qualitative strand of research did as Teddlie and Tashakkori (2009) suggested it might: modifications were inferred and a new hypothesis was devised, which considered students’ academic ability.

Table 4.12

Mean, Standard Deviation, Minimum, and Maximum for Student GPA.

Variable	n	<i>M</i>	<i>SD</i>	Min	Max
Student GPA	174	3.16	.582	1.0	4.0

Note. GPA is un-weighted and can range from 0-4.0.

Figure 4.3 presents the revised model of the effects of cognitive gap, dyadic intensity, teacher LMX, and student LMX on student achievement. In the model, there are still three endogenous variables: 1) teacher LMX, 2) student LMX, and 3) student achievement; however, the addition of student GPA brings the total number of exogenous variables to five. The initial assumptions remain, but an additional assumption included in this model is the impact of student GPA on teacher LMX (path *d*), teacher LMX (path *e*), and student achievement (path *h*).

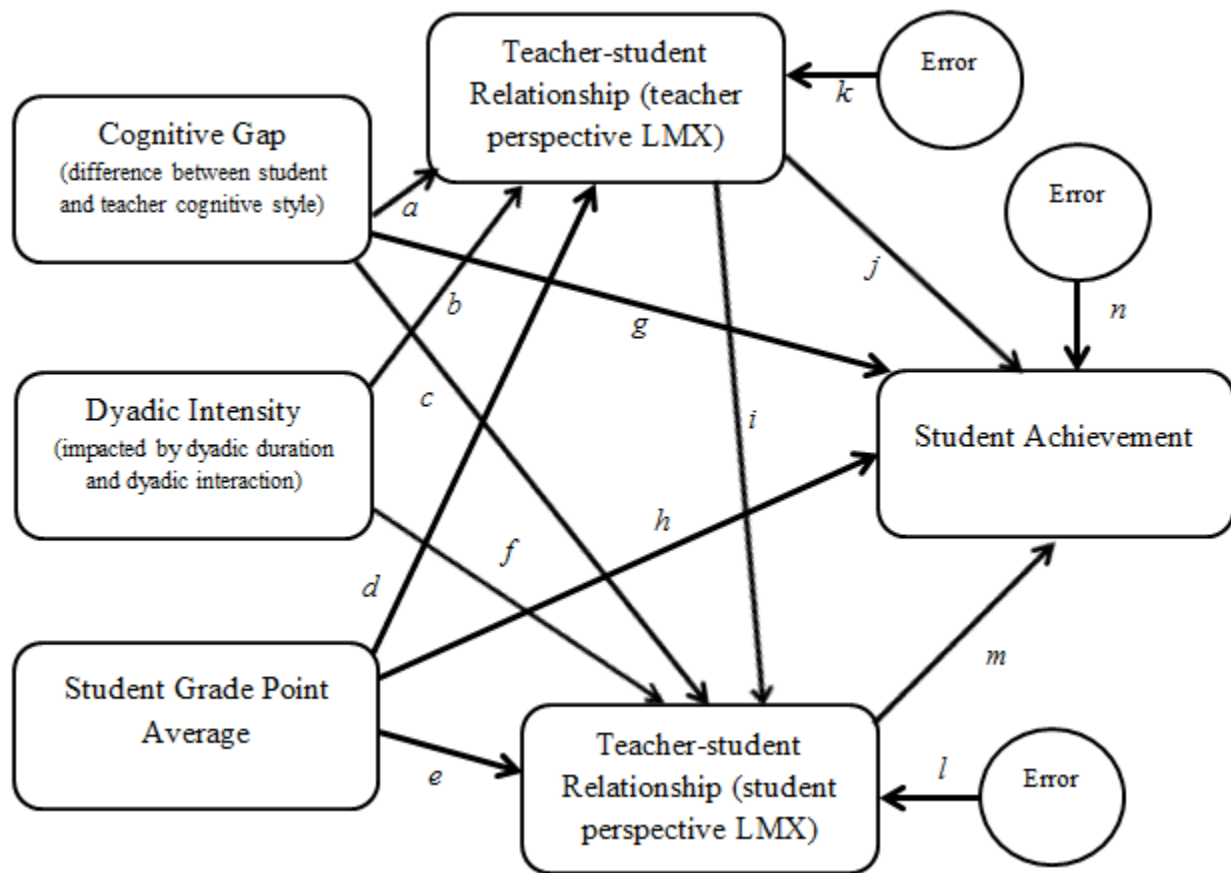


Figure 4.3. Revised model of the effects of cognitive gap, dyadic intensity, student GPA, teacher LMX, and student LMX on student achievement.

A Pearson product-moment correlation coefficient was computed to assess the relationships between the cognitive gap between teachers and students, dyadic intensity, student

GPA, LMX quality, and student achievement. Seven statistically significant relationships were identified amongst the various dimensions of teacher-student relationships with the addition of the student GPA variable. Specifically, the relationships between dyadic intensity and student GPA, dyadic intensity and teacher LMX, dyadic intensity and student LMX, student GPA and teacher LMX, student GPA and student LMX, student GPA and student achievement, and teacher LMX and student LMX were significant. There was a weak, positive relationship between dyadic intensity and student GPA ($r=.28, p<0.01$). A weak, positive relationship was found between dyadic intensity and teacher LMX ($r=.15, p<.05$). The correlation coefficient revealed a weak, positive relationship between dyadic intensity and student LMX ($r=.21, p<.01$). There was a weak, positive relationship between student GPA and teacher LMX ($r=.19, p<0.05$). A moderate, positive relationship was found between student GPA and student LMX ($r=.32, p<.01$). The correlation coefficient revealed a moderate, positive relationship between student GPA and student achievement ($r=.49, p<.01$). Additionally, there was a moderate, positive relationship between teacher LMX and student LMX ($r=.43, p<0.01$). Table 4.13 presents summary of correlation coefficients for the dimensions of teacher-student relationships under investigation.

Table 4.13

Correlation Matrix for Hypothesized Path Model With Added Variable

		Cognitive Gap	Dyadic Intensity	Student GPA	Teacher LMX	Student LMX	Student Achieve.
Cognitive Gap	Pearson Correlation	-					
Dyadic Intensity	Pearson Correlation	-.03	-				
Student GPA	Pearson Correlation	-.01	.28**	-			
Teacher LMX	Pearson Correlation	-.04	.15*	.19*	-		
Student LMX	Pearson Correlation	.08	.21**	.32**	.43**	-	

Student Achieve.	Pearson Correlation	-.02	.11	.49**	.10	.11	-
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Note. * $p < 0.05$; ** $p < 0.01$.

After adding student GPA as an independent variable, a forced entry regression analysis was conducted to determine which dimensions of teacher-student relationships affect LMX quality from the teacher perspective. Table 4.14 shows the results of the regression analysis. The three variables of student GPA, cognitive gap, and dyadic intensity, in combination, account for 4.8% of the variance in teacher LMX. The overall regression is statistically significant ($F = 2.833$, $p < 0.05$). The variable of student GPA ($b = 1.717$, $t = 2.047$, $p < 0.05$) had a significant effect on teacher LMX.

Table 4.14

Regression Output for Teacher LMX (X_4) on Student GPA (X_1), Cognitive Gap (X_2), and Dyadic Intensity (X_3).

Model Summary							
Model	R	R ²	Adjusted R Square	Std. Error of the Estimate			
1	.218 ^a	.048	.031	6.164			
a. Predictors: (Constant), Student GPA, Cognitive Gap, Dyadic Intensity							
ANOVA							
Model	Sum of Squares	df	Mean Square	F	Sig.		
Regression	322.916	3	107.639	2.833	.040 [*]		
Residual	6459.661	170	37.998				
Total	6782.578	173					
Coefficients							
Model	Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics		
	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	35.718	2.674		13.356	.000		
Student GPA	1.717	.839	.160	2.047	.042*	.920	1.087
Cognitive Gap	-.025	.048	-.039	-.515	.607	.999	1.001
Dyadic Intensity	.078	.059	.104	1.333	.184	.919	1.088

Note. *p<0.05; **p<0.01. ^aDependent Variable: Teacher LMX.

After adding student GPA as an independent variable, a forced entry regression analysis was conducted to determine which dimensions of teacher-student relationships affect LMX quality from the student perspective. Table 4.15 shows the results of the regression analysis. The four variables of dyadic intensity, teacher LMX, cognitive gap, and student GPA, in combination, account for 26.1% of the variance in student LMX. The overall regression is statistically significant ($F=14.912$, $p<0.01$). The variables of teacher LMX ($b=.362$, $t=5.536$, $p<0.01$) and student GPA ($b=2.378$, $t=3.286$, $p<0.01$) had a significant effect on student LMX.

Table 4.15

Regression Output for Student LMX (X_5) on Dyadic Intensity (X_1), Teacher LMX (X_2), Cognitive Gap (X_3), and Student GPA (X_4).

Model Summary							
Model	R	R ²	Adjusted R Square	Std. Error of the Estimate			
1	.511 ^a	.261	.243	5.26			
a. Predictors: (Constant), Dyadic Intensity, Teacher LMX, Cognitive Gap, Student GPA							
ANOVA							
Model	Sum of Squares	df	Mean Square	F	Sig.		
Regression	1647.149	4	411.787	14.912	.000		
Residual	4666.957	169	27.615				
Total	6314.106	173					
Coefficients							
Model	Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics		
	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	17.796	3.264		5.453	.000		
Dyadic Intensity	.064	.050	.088	1.265	.208	.910	1.099
Teacher LMX	.362	.065	.375	5.536	.000**	.952	1.050
Cognitive Gap	.063	.041	.103	1.552	.122	.997	1.003
Student GPA	2.378	.724	.229	3.286	.001**	.898	1.113

Note. *p<0.05; **p<0.01. ^aDependent Variable: Student LMX.

A third forced entry regression analysis was conducted to calculate the path coefficients that represent the effects of teacher LMX, cognitive gap, student GPA, and student LMX on student achievement. Table 4.16 shows the results of the regression analysis. The four variables of teacher LMX, cognitive gap, student GPA, and student LMX, in combination, account for 24.3% of the variance in student achievement. The overall regression is statistically significant ($F=13.383$, $p<0.01$). The variable of student GPA ($b=7.816$, $t=6.990$, $p<.01$) had a significant effect on student achievement.

Table 4.16

Regression Output for Student Achievement (X_5) on Teacher LMX (X_1), Cognitive Gap (X_2), Student GPA (X_3), and Student LMX (X_4).

Model Summary							
Model	R	R ²	Adjusted R Square	Std. Error of the Estimate			
1	.493 ^a	.243	.225	8.037			
a. Predictors: (Constant), Teacher LMX, Cognitive Gap, Student GPA, Student LMX							
ANOVA							
Model	Sum of Squares	df	Mean Square	F	Sig.		
Regression	3457.935	4	864.484	13.383	.000 ^{**}		
Residual	10787.341	167	64.595				
Total	14245.276	171					
Coefficients							
Model	Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics		
	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	63.069	5.350		11.789	.000		
Teacher LMX	.030	.109	.021	.274	.784	.809	1.237
Cognitive Gap	-.011	.063	-.012	-.177	.860	.985	1.016
Student GPA	7.816	1.118	.499	6.990	.000 ^{**}	.891	1.123
Student LMX	-.053	.118	-.035	-.449	.654	.746	1.340

Note. * $p<0.05$; ** $p<0.01$. ^aDependent Variable: Student Achievement.

Using the three revised multiple regression models, a path analysis was conducted to determine the causal effects of cognitive gap, student GPA, teacher LMX, and student LMX on student achievement. The path coefficients, which are the standardized regression coefficients, are presented in the path model shown in Figure 4.4. The data partially supports the revised path model, as the path coefficients from student GPA to teacher LMX, student GPA to student LMX, student GPA to student achievement, and teacher LMX to Student LMX are statistically significant. The statistical significance of the first two regression models—teacher LMX and Student LMX—and the path coefficients from student GPA to teacher LMX, student GPA to student LMX, and teacher LMX to Student LMX indicate the potential indirect effects of student GPA on student LMX.

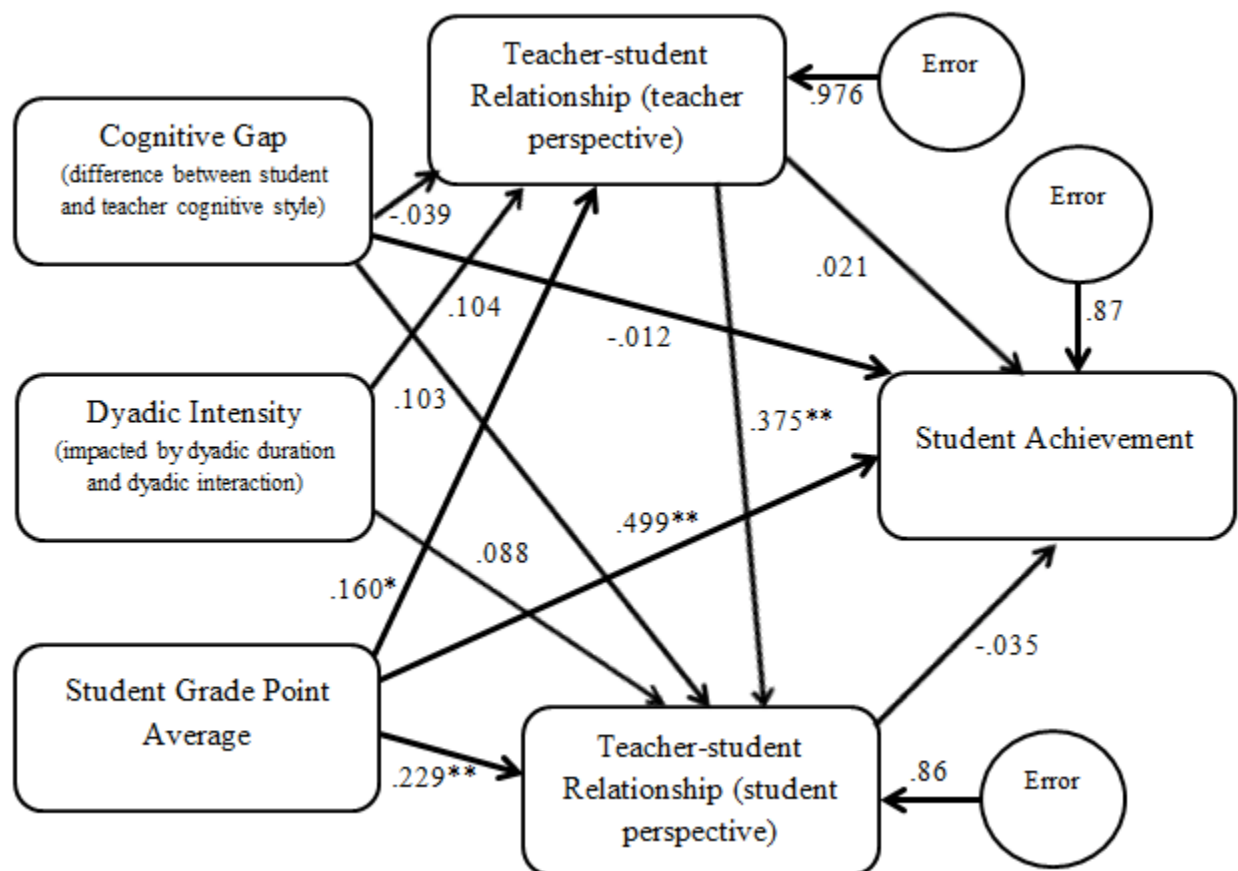


Figure 4.4. Solved model of the effects of cognitive gap, dyadic intensity, student GPA, teacher LMX, and student LMX on student achievement (* $p < 0.05$; ** $p < 0.01$).

To determine the indirect effect of student GPA on student LMX, the path from dyadic student GPA to teacher LMX was multiplied times the path from teacher LMX to student LMX. To calculate the total effect of student GPA on student LMX, the direct effect was added to the indirect effect. Table 4.17 shows the direct, indirect, and total effects of student GPA and teacher LMX on student LMX.

Table 4.17

Standardized Direct, Indirect, and Total Effects of Student GPA and Teacher LMX on Student LMX.

Variable	Direct Effect	Indirect Effect	Total Effect
Teacher LMX	.375	-	.375
Student GPA	.229	.016	.245

Summary

In this embedded sequential explanatory case study, a quantitative → qualitative two-strand design of inquiry approach was used to explain how the quality of teacher-student relationships and the gap of cognitive styles between teachers and students impact student achievement.

In the first strand of inquiry, quantitative measures were used to answer the research questions. Three statistically significant relationships were identified amongst the various dimensions of teacher-student relationships; specifically, the relationships between dyadic intensity and teacher LMX, dyadic intensity and student LMX, and teacher LMX and student LMX were significant. In determining which dimensions of teacher-student relationships

affected LMX quality from the teacher perspective, dyadic intensity had a significant effect. In determining which dimensions of teacher-student relationships affected LMX quality from the student perspective, dyadic intensity and teacher LMX had a significant effect. The data partially supported the hypothesized path model, as the path coefficients from dyadic intensity to teacher LMX, dyadic intensity to student LMX, and teacher LMX to student LMX were statistically significant. None of the paths to student achievement, however, were statistically significant.

In the second strand of inquiry, in-depth, semi-structured interviews of participants were used. During the interviews, participants offered descriptions of their relationships with various teachers and students and also described how teacher-student relationships develop. The data analysis resulted in five themes that provided a better understanding of the development of teacher-student relationships.

Data from both strands of inquiry were then joined to better understand the phenomena under the effect of teacher-student relationships on student achievement. Qualitative data suggested a modification to the hypothesized path model of how teacher-student relationships effect student achievement. Consequently, a new hypothesis was developed, resulting in a revised path model. The data partially supported the revised path model, as the path coefficients from student GPA to teacher LMX, student GPA to student LMX, student GPA to student achievement, and teacher LMX to Student LMX were statistically significant.

Chapter 5

Overview

To aid the reader, the final chapter of this dissertation reiterates the research problem, recapitulates the population and sample, and reviews the methodology used in this study. Major segments of the final chapter summarize the results of the study, discuss the significance of the results, highlight implications for educational practice, and provide direction for future research.

Problem statement. In a classroom, relationships inevitably form between teachers and students. The type and quality of relationships between teachers and students can vary depending on a variety of factors. Leader-member exchange (LMX) theory reasons that subordinates who have a high-quality relationship with their leader are willing to do more than is required (Northouse, 2010). If a teacher, as a classroom leader, could foster high-quality relationships with all students, would students, as subordinates, be willing to work harder in the classroom? If so, total student achievement and learning outcomes might increase. While many leadership theories have been empirically applied to educational settings, studies of LMX theory involving K-12 education are virtually nonexistent. When considering LMX, antecedents of relationship quality are of interest. One such precursor to the quality of relationships between teachers and students could be the difference in cognitive style.

Cognitive style, as explained in Kirton's (2003) adaption-innovation (A-I) theory, references one's preference for solving problems. A-I theory refers to the differences between individual preferences for solving problems as cognitive gap (Kirton, 2003), and describes the detrimental effects of cognitive gap when working with others. A benefit of applying A-I theory to an educational context is the potential that an understanding of the theory has for facilitating

positive working relationships between teachers and students. A-I theory holds that problems of communication and collaboration increase as the gap between peoples' cognitive styles increases (Kirton, 2003). If large cognitive gaps exist between teachers and students, causing problems in the dyadic relationship, it is possible that student achievement will be negatively impacted.

Involving cognitive style in the investigation of teacher-student relationships may lead to a deeper understanding of the phenomenon. A lack of understanding exists in regard to how cognitive gap and teacher-student relationship quality interact with one another and impact student achievement. As teachers strive to lead students to academic success, the present research has the potential to alter the ways in which teachers interact with students. Thus, the present study expands upon existing research in the areas of LMX and cognitive style.

Population and sample. The population for this study encompassed the teachers and students in the CTE department of a suburban high school in western North Carolina. As the census sampling method was used, the quantitative participant sample comprised 11 career and technical education (CTE) teachers and 210 CTE students, representing six CTE disciplines: (a) agriculture; (b) business and information technology; (c) family and consumer sciences; (d) health occupations; (e) marketing; and (f) trade and industrial education.

The qualitative strand of inquiry involved two subgroups of participants: teacher participants and student participants. Twelve participants were selected for the qualitative strand: four teachers and eight students. The researcher determined that a point of saturation was reached after interviewing 12 participants. Based on the quantitative results, the teacher participants were selected using a typical case sampling strategy to identify the most typical representation of teachers in the study. The student participants were selected using intensity

sampling to achieve comparability. Four students who reported extremely high scores on the Leader-Member Excellence–Shared-Leadership Exchange (LMX-SLX) instrument, in comparison with their peers, and four students who reported a low LMX-SLX score, in comparison with their peers, were selected.

Review of methodology. The purpose of this study was to explain how teacher-student relationships and cognitive style effect student achievement. The study was an embedded sequential explanatory case study with a quantitative→qualitative two-strand design of inquiry.

The first strand of inquiry used a quantitative approach to explain the relationships between cognitive gap, teacher-student dyadic intensity, perceived quality of teacher-student relationships, and student achievement. Data for the quantitative strand were collected using the Kirton Adaption-innovation Inventory (KAI), a researcher-developed survey for measuring dyadic intensity, the Leader-Member Excellence-Shared-Leadership Exchange (LMX-SLX) instrument, and a standardized end-of-course test. Lower scores on the KAI represent a more adaptive cognitive style; higher scores on the KAI indicate a more innovative cognitive style. Lower scores on the LMX-SLX represent a perceived lower-quality relationship between a leader and subordinate; higher scores on the LMX-SLX signify a perceived higher-quality relationship between a leader and subordinate. Lower scores on the dyadic intensity survey represent a lower intensity in the teacher-student dyadic relationship; higher scores indicate a higher intensity in the teacher-student dyadic relationship. Lower scores on the end of course test represent lower student achievement; higher scores on the end of course test represent higher student achievement.

The second strand of inquiry qualitatively investigated how teachers and students describe the development of teacher-student relationships and the impact of teacher-student relationships on student achievement. Data for the qualitative strand were collected through in-depth, semi-structured interviews using open-ended questions following an interview guide. The questions that constituted the interview guide were developed after quantitative data analysis. After analyzing the quantitative and qualitative data, data from both strands of inquiry were merged to provide a better understanding of the phenomenon explored.

The following research questions guided the study:

1. What are the relationships between cognitive gap between teachers and students, dyadic intensity, LMX quality, and student achievement?
 - a. What dimensions of teacher-student relationships affect LMX quality from the teacher perspective?
 - b. What dimensions of teacher-student relationships affect LMX quality from the student perspective?
2. What are the effects of cognitive gap, teacher LMX, and student LMX on student achievement?
3. How do teachers and students describe the development of teacher-student dyadic relationships and the impact of teacher-student relationships on student achievement?
4. How do the descriptions of dyadic relationship development offered by teachers and students converge with the quantitative results?

Summary of the Results

The results of the present study are summarized in order of relation to the research questions. During the initial quantitative strand, three statistically significant relationships were identified among the various dimensions of teacher-student relationships; specifically, the relationships between dyadic intensity and teacher LMX, dyadic intensity and student LMX, and teacher LMX and student LMX were significant. There was a weak, positive relationship between dyadic intensity and teacher LMX. A weak, positive relationship was found between dyadic intensity and student LMX. Also, there was a moderate, positive relationship between teacher LMX and student LMX.

Dyadic intensity had a significant effect on teacher-student relationship quality from the teacher perspective. Dyadic intensity and teacher-student relationship quality from the teacher perspective had a significant effect on teacher-student relationships from the student perspective.

From the qualitative data analysis, five themes emerged. The five themes were:

1. The way in which a teacher structures the classroom affects the quality of teacher-student relationships.
2. Teacher actions affect student motivation.
3. Teachers have a preference for students who excel academically and are well behaved.
4. The quality of teacher-student relationships improves with increased interaction.
5. High-quality teacher-student relationships are caring, trusting, and mutually respectful.

After merging the quantitative data with the qualitative data, modifications were inferred, a new hypothesis was devised, and a revised model of the effects of teacher-student relationships and cognitive style on student achievement was created. Specifically, student GPA was added to the model, representing students' academic ability, as a predictive variable. This derived out of

the third theme from the qualitative strand analysis. Analysis of the revised model revealed seven statistically significant relationships. The relationships between dyadic intensity and student GPA, dyadic intensity and teacher LMX, dyadic intensity and student LMX, student GPA and teacher LMX, student GPA and student LMX, student GPA and student achievement, and teacher LMX and student LMX were significant. There was a weak, positive relationship between dyadic intensity and student GPA. A weak, positive relationship was found between dyadic intensity and teacher LMX. There was a weak, positive relationship between dyadic intensity and student LMX. There was a weak, positive relationship between student GPA and teacher LMX. A moderate, positive relationship was found between student GPA and student LMX. A moderate, positive relationship was found between student GPA and student achievement. Additionally, there was a moderate, positive relationship between teacher LMX and student LMX.

Student GPA had a significant effect on teacher LMX. Teacher LMX and student GPA had a significant effect on student LMX. Student GPA had a significant effect on student achievement.

Limitations

In consideration of the results of the study, the researcher acknowledges limitations related to the population and sampling. Because of the nature of the research design—in that the investigation was a case study—findings are limited to the one case site under investigation and cannot, therefore, be generalized to a larger population. Because the students who participated in the study were enrolled in classes selected by the teacher to participate in the study, the student sample could differ from the general CTE student population. Therefore, sampling in this regard

prevents the researcher from making the claim that the student sample is representative of the total population. It should be noted that teachers were aware of the purpose of the study before selecting which of their classes could participate. Finally, the student sample for the qualitative data collection represented perspectives from students with extreme scores on the LMX-SLC. It is possible that perspectives of students from the middle range of scores could differ.

Limitations exist in regard to the quantitative analysis as well. Because this investigation was the first of its kind, exploring the interactions of leader-member exchange and cognitive style, supporting empirical evidence for the development of the researcher's theory, which formed the path model, was severely limited. The researcher relied upon inferences from studies involving solely LMX or cognitive style, recommendations from previous research, and theoretical notions provided by LMX theory and A-I theory to create the hypothesized model. In doing this, other important variables of student achievement were left out of the model, resulting in low R^2 values, high error, and little predictability of the overall model.

Discussion and Conclusions

Though the initial model that was presented in the conceptual framework was shown to have three statistically significant Pearson product-moment correlations and path analysis revealed a causal effect of dyadic intensity on teacher LMX and dyadic intensity on student LMX, the revised path model analysis did not show similar results. Given the nature of mixed methods studies, and because the revised model, shown in Figure 5.1, was informed by qualitative data analysis, the researcher dismissed results from the initial model analysis. Therefore, the discussion and conclusions will focus on the solved, revised path model.

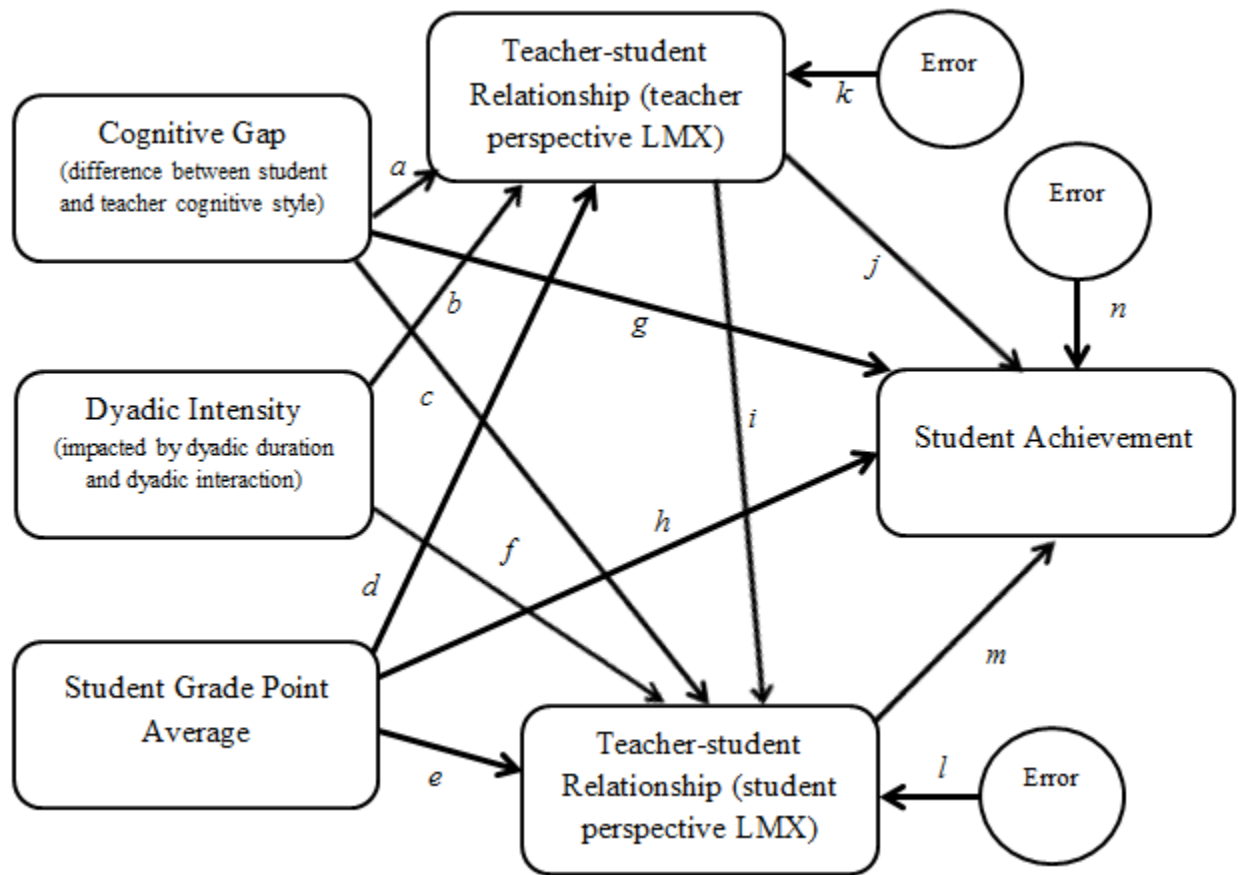


Figure 5.1. Revised model of the effects of cognitive gap, dyadic intensity, student GPA, teacher LMX, and student LMX on student achievement.

Of the seven statistically significant relationships highlighted by Pearson product-moment coefficients, four relationships were explained through analysis of the final path model. First, there was a weak, positive relationship between student GPA and teacher LMX. This suggests that a higher student GPA is associated with a higher-quality teacher-student relationship from the teacher's perspective. This specific relationship was identified in the revised path model and is illustrated in figure 5.2. Results of the path analysis showed a statistically significant causal relationship between student GPA and teacher LMX, indicating that a higher student GPA caused a higher-quality teacher-student relationship from the teacher's perspective.

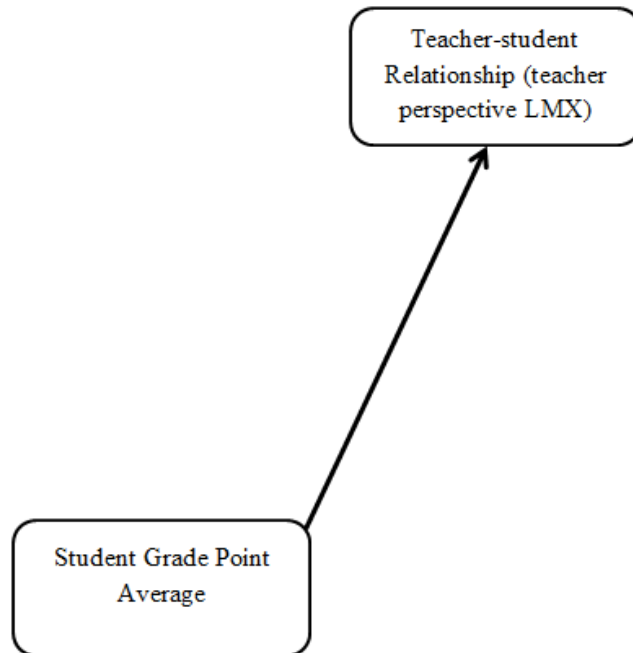


Figure 5.2. Diagram illustrating the causal relationship between student grade point average and teacher LMX.

This finding was substantiated by qualitative data, in the third theme that emerged, indicating that teachers have a preference for students who excel academically and are well behaved. For example, in regard to high achieving students, Mr. Lewis said, “I think it’s easier to work with those that it clicks easy” (I10 181). When asked why she felt teachers had high-quality interactions with her, Dakota pointed to her academic achievement, saying, “Well, I do make good grades” (I8 129). Morgan provided a similar position, noting of one teacher, “I get good grades. So he is really just proud of me” (I5 115). Of one teacher, Bailey said, “I think that you, he maybe is more inclined to some students because of their performance in his class” (I7 253–54) and as Nat explained of a teacher, “If you do good grades, she kind of, she kind of focuses more on you, because she knows that you’re taking it in and that you’re actually going to use it on your test” (I2 135–37).

Early studies of leader-member exchange focused on two distinct groups in a work unit, the in-group and the out-group. As explained by Graen (1976), subordinates who went beyond normal expectations were more impressionable on leaders. The same concept can be applied in consideration of how a higher student GPA causes a higher-quality teacher-student relationship from the teacher's perspective. The researcher attributes the causal relationship to assumptions that a teacher may make about students with higher GPAs. If a teacher assumes that a student with a higher GPA is naturally a better student, the teacher may intentionally foster a higher-quality relationship with that student.

A moderate, positive relationship was found between student GPA and student LMX. This suggests that a higher student GPA is associated with a higher quality of teacher-student relationship from the student's perspective. Further, there was a moderate, positive relationship between teacher LMX and student LMX, which suggests a higher-quality teacher-student relationship from the teacher's perspective is associated with a higher-quality teacher-student relationship from the student's perspective. Both of these relationships were identified in the revised path model and are illustrated in figure 5.3. Results of the path analysis showed a statistically significant causal relationship between student GPA and student LMX, indicating that a higher student GPA caused a higher-quality teacher-student relationship from the student perspective. Also, results of the path analysis showed a statistically significant causal relationship between teacher LMX and student LMX, indicating that a higher-quality teacher-student relationship from the teacher perspective caused a higher-quality teacher-student relationship from the student perspective.

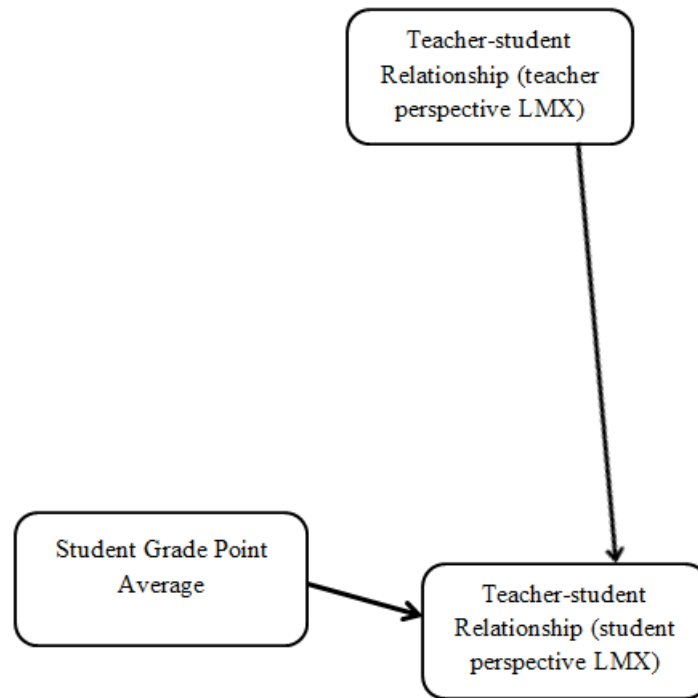


Figure 5.3. Diagram illustrating the causal relationship between student grade point average and teacher LMX and the causal relationship between teacher LMX and student LMX.

The qualitative data validated the idea that a higher-quality teacher-student relationship from the teacher perspective caused a higher-quality teacher-student relationship from the student perspective. Students mentioned that teacher actions often impact how students view teachers and interact with them during class, as indicated in the first qualitative them – the way in which a teacher structures the classroom affects the quality of teacher-student relationships. About one teacher, Nat said, “She makes you respect her. Like it’s a very strict—I like boundaries. And she has those boundaries. And it makes for a very more [sic] structured class and that’s kind of like what I like. So I’ve enjoyed her class” (I2 28–30). Nat’s preference for boundaries supported his score on the KAI, which was 68, indicating a more adaptive cognitive style, which is associated with a preference for structure. Dakota explained the impact of an energetic teacher, saying, “She always kept you like focused with the class, and like it was, I

don't know if you'd call it like energized but, you know, she just made it fun so you could remember everything" (I8 25–27). Logan brought attention to the impact that a caring teacher has in terms of fostering teacher-student relationships. He said, "I wish a lot more teachers were like [teacher's name] so they could actually care about what you're doing and try to help you with whatever you need" (I12 301–02). He added, "Usually those are the best teachers, the ones that actually care" (I12 69–70). Cameron agreed, adding, "If it's someone who just doesn't care or doesn't like me, then I'm just going to do enough to pass so I can get out of there" (I3 144–46). Even teachers were aware that their leadership in the classroom impacted how students perceived them. Ms. Williams, who talked about high expectations in her classroom, thought some students perceived her expectations negatively. As she explained, "I guess some students don't like me because, I mean, I require a lot" (I1 34–35). Ms. Williams' position illustrates how a large cognitive gap between teachers and students may manifest in the classroom, if her expectations do not fit the preferred style of some students.

Previous studies have related subordinate actions to leader-member exchange. Myers (2006) demonstrated that students who perceived a higher-quality relationship with their instructor were more motivated to communicate with the instructor. Further, Bowler (2001) connected teacher evaluations to teacher-student relationships, indicating that students who perceived a higher-quality relationship with the teacher scored the teacher higher on end-of-course ratings. These studies point to how student actions can be guided by LMX.

Graen and Uhl-Bien (1995) suggested that leaders provide all subordinates with access to LMX processes, indicating that leaders set the pace for LMX development; however, the three phases of leadership-making explain that subordinates can initiate further growth. All dyadic relationships begin with the stranger phase, but enhanced working relationships must occur

through an offer made by either person in the dyad, allowing dyads to move to advanced stages of development (Graen & Uhl-Bien, 1995). In cases where the offer may be initiated from the subordinate, though, the leader controls the speed of dyadic relationship development. In order for progression to occur, though, both members of the dyad must be amenable to an enhanced relationship. Still, in the case of teachers and students, if the teacher does not agree to advance the relationship, it can never evolve. Therefore, the researcher concludes that the quality of teacher-student relationships from the student perspective is dependent on teacher-student relationships from the teacher perspective. Just as leaders should be encouraged and trained in making partnership offers to all subordinates to make the LMX process more equitable and to increase the leadership of managers (Graen & Uhl-Bien, 1995), teachers as leaders, at the pre-service and in-service levels, should receive professional development and instruction in developing teacher-student relationships.

As previously stated, a statistically significant causal relationship between student GPA and teacher LMX was revealed through the path analysis, indicating that a higher student GPA caused a higher-quality teacher-student relationship from the teacher perspective. It is important to consider this relationship when examining teacher-student relationship quality from the student perspective as well. Figure 5.4 illustrates how the student grade point average not only has a direct effect on student LMX, but also has an indirect effect on student LMX through teacher LMX, which increases the total effect of student GPA on teacher LMX. This causal relationship was also identified in the revised model.

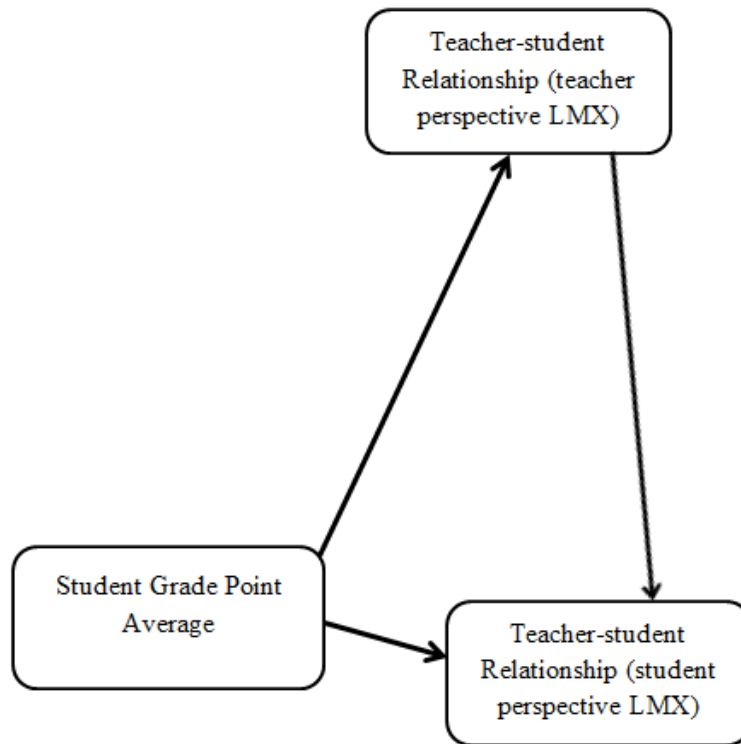


Figure 5.4. Diagram illustrating the indirect effect of student grade point average on student LMX.

During qualitative data collection, neither students nor teachers were questioned about students' grade point averages; however, student performance emerged in the theme that teachers have a preference for students who excel academically and are well behaved. This theme supports the connections among student GPA, teacher LMX, and student LMX from the illustrated in Figure 5.4. In addition, student motivation may have been at work. Students who have higher GPAs are academically motivated, which previous studies (Wigfield & Eccles, 2002) have related to student diligence in the classroom. Wigfield and Eccles (2002) explained that academic motivation predicted educational persistence. The researcher credits the causal effect of student GPA on student LMX to the educational persistence and academic motivation of students. It is likely that students in this study who were academically motivated were also motivated to have a higher-quality relationship with their teachers, as they may have viewed

teachers as the key holders to academic success. Teachers in the present study noted individual student motivation related to the quality of relations. In talking about a student with whom she has a high-quality relationship, Ms. Williams said, “She’s more of a self—how would you describe it? She motivates. I mean, she’s very self-motivated” (I1 280–81). Mr. Lewis experienced this with students as well. When describing a student who comes from a difficult home life, he talked about her natural drive, saying, “She has the desire to be more than she’s ever been” (I10 85–86). In addition to causing higher-quality teacher-student relationships, academic motivation relates to student achievement.

A moderate, positive relationship was found between student GPA and student achievement. This suggests that a higher student GPA is associated with higher student achievement. In the present study, student scores on a state-administered standardized test measured student achievement. This relationship was identified in the revised path model and is illustrated in Figure 5.5. Results of the path analysis showed a statistically significant causal relationship between student GPA and student achievement, indicating that a higher student GPA caused higher student achievement.

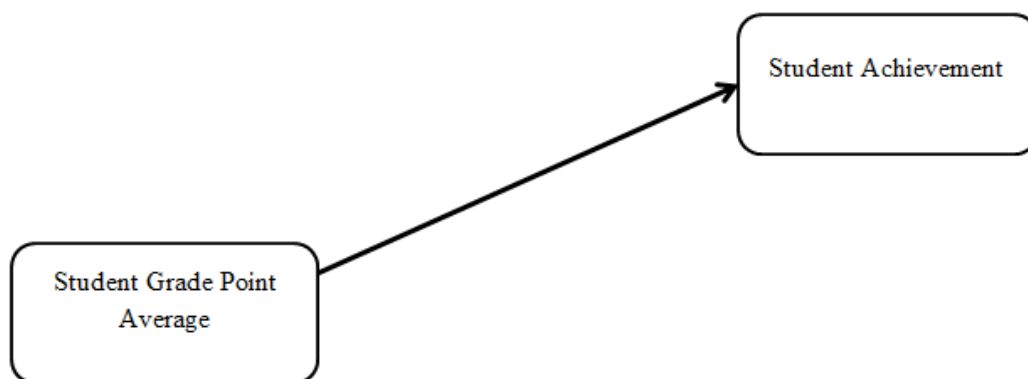


Figure 5.5. Diagram illustrating the causal relationship between student grade point average and student achievement.

The researcher hypothesized that teacher LMX and student LMX would also effect student achievement; however, this hypothesis was not supported by the data. Because student GPA was not included in the original conceptual model and was, therefore, not a focus of quantitative data collection, the interview guide using during qualitative data collection did not address this finding. In spite of this, however, teacher comments during the interviews validated the finding that a higher student GPA causes higher student achievement. Ms. Williams talked about a high-achieving student who needed minimal help with assignments. When asked how much direction she provided to that student, Ms. Williams said, “Little instruction as far as she knows that I support her, but not a lot of—I don’t have to tell her everything to do. You know, if I give her an assignment, she’s good with it” (I1 281–83). Mr. Lewis said, “I think there are some students that just sort of shine, you know, and they, you can see that they want to do this and that they’re interested in learning” (I10 34–36). Mr. Lewis continued, saying, “Some of them probably have more natural ability to achieve more” (I10 373–74), and, speaking specifically of one student, added, “She naturally would excel whether I had a good relationship with her or not” (I10 376–77). This finding contradicted leader-member exchange theory, which suggests that subordinates who have low-quality relationships with their leaders do minimal work (Dansereau, Graen, & Haga, 1975). Further, those who have high-quality relationships with their leaders may offer more time and energy on tasks, may demonstrate increased commitment to tasks, and may assume greater responsibility (Dansereau, Graen, & Haga, 1975). In the present study, though, the quality of relationships between teachers and students did not effect student achievement. The researcher concedes, though, that the measure of student

achievement in the present study did not reflect the extent to which students were committed to tasks or assumed responsibility as a learner in the classroom because achievement was measured by performance on a standardized test.

The researcher hypothesized that cognitive gap would effect the quality of teacher-student relationships from both the teacher and student perspective. This relationship, however, was not statistically significant in the present study. This result substantiates the findings of Friedel and Rudd (2009). In their study, Friedel and Rudd (2009) showed that cognitive gap between students and instructors had little to no effect on student engagement. The researcher suggests that over the duration of a course, students learn to cope with cognitive style differences, which explains why the cognitive gap did not have a significant effect. This claim is made based on the previous position of Jablokow, Vercellone-Smith, and Richmond (2009), who suggested that learning from a teacher whose style is different could facilitate coping behavior. In spite of the lack of statistical significance in the present study, the researcher believes that cognitive gap was noticeable to students as evidenced through qualitative data.

Qualitative data analysis agreed with research efforts of Puccio, Talbot, and Joniak (1993), who evaluated student perceptions of the A-I style required by the course in which they were enrolled, the styles they (the students) exhibited in the course, and their style preference. Results of the study showed that a course requiring adaptive behavior was more stressful than a course requiring innovative behavior, and a greater degree of required conformity in the class increased stress. Puccio, Talbot, and Joniak (1993) warned that messages communicating a desire for students to adopt certain types of behavior cause students to feel stress. During the interviews, student participants of the present study referenced teacher's preference for structure in teaching. Of some teachers, Bailey said, "They think that there's one way to understand

everything. It's their way. And there's no other way around it. You have to conform to what they need you to be" (I7 49–51). Interestingly, Bailey's score on the KAI was 76, indicating a more adaptive cognitive style. Perhaps Bailey's sentiments reflect the manifestation of cognitive gap between him and some of his teachers. Cameron reported a KAI score of 96, which is the theoretical mean of the KAI, and his thoughts on classroom structure indicate a desire for structure with an acceptance of lack of structure. About teachers and structure, Cameron said, "I like a structure, like, I don't like—yes, I like structure. But that doesn't necessarily mean it has to be, like, strict, unreasonable" (I3 381–82). He continued, "I've had those that are just so strict, all anybody's thinking about is getting out of the class rather than actually learning from the class" (I3 389–90). This is certainly not the desired effect for which teachers strive.

The researcher also hypothesized that dyadic intensity would effect the quality of teacher-student relationships from both the teacher and student perspective. This relationship, however, was not statistically significant in the present study. In gauging the intensity of a teacher-student dyad, the researcher considered the level of involvement in a career and technical student organization (CTSO), but the researcher points out that CTSO participation by itself may have been a better variable to consider than grouping CTSO participation as a measure of dyadic intensity. This thought comes from a study by Alfeld, Hansen, Aragon, and Stone (2006), who reported that the more a student was involved in a CTSO, the higher his or her grades would be. While CTSO involvement can be attributed to more intense interactions in a career area in high school (Alfeld, Hansen, Aragon, & Stone, 2006), it seems that CTSO involvement should be considered independently of other factors, including the length of time a student had known a teacher, additional interactions with a teacher outside of a CTSO and outside of class, and the number of times a student had completed a class taught by a teacher.

Analysis of the revised path model explaining the causal effects of cognitive gap, dyadic intensity, student GPA, teacher LMX, and student LMX on student achievement showed that not all predictors were significant. As a result, the researcher modified the model to show a concluding relationship between significant predictors in the model. The revised conceptual model is shown in Figure 5.6. The researcher concludes that student grade point average is a predictor of the perceived quality of teacher-student relationships from both the teacher perspective and the student perspective. Further, the perceived quality of teacher-student relationships from the teacher perspective is a predictor of the perceived quality of teacher-student relationships from the student perspective. Lastly, student grade point average is a predictor of student achievement.

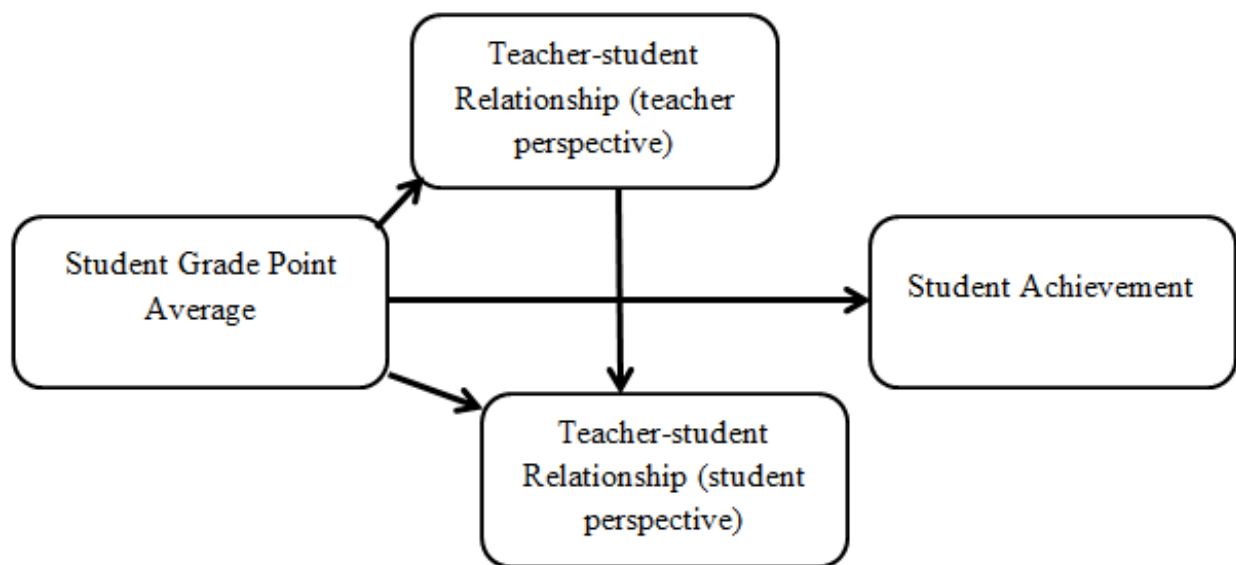


Figure 5.6. Diagram illustrating the causal relationships between student grade point average, teacher LMX, student LMX, and student achievement.

Relating results of the present study to previous research is difficult in that no prior studies of LMX or cognitive style have simultaneously investigated teacher-student dyads and student achievement. Additional conclusions, however, were drawn from the qualitative data analysis. The researcher concludes that high-quality teacher-student relationships are nurtured

when teachers demonstrate care, trust, and respect for students. Teachers in the present study continuously spoke of encouraging students, demonstrating care and concern for their well being, demonstrating trust, and treating students with respect. Ms. Davis noted that one thing she did in her classroom was to “try to encourage them, you know, to become all they can become each and every day” (I4 122–23). About students, Mr. Lewis said, “They’ve told me that some teachers they really don’t feel care about them” (I10 229). In demonstration of a caring attitude toward students, Mr. Johnson said, “I make sure that they have every opportunity to succeed” (I6 8–9). Students were aware of the care demonstrated by teachers and were appreciative. As Logan commented about teachers, “Usually those are the best teachers, the ones that actually care” (I12 69–70). In regard to trust, Mr. Johnson said, “If I see a student that’s starting to get a mastery of a concept, I tend to enforce that by asking if they’ll help a student that’s not got mastery of the concept” (I6 138–39). Asking students to help the teacher with instructing other students demonstrates trust of that student not to lead his or her peers astray. Students were aware of this trust. Bailey told of how one of his teachers would ask him to help other students during class if they needed extra help in drawing landscape plans or reading. Bailey noted that the relationship did not start off with such high trust when he first had the teacher for class, saying, “I think he’s just more trusting of me now than he was then” (I7 138–39). Students enjoyed having a trusting relationship with their teachers. As Nat said of one teacher, “She’s the type of person that you can confide in” (I2 37–38). Finally, teachers who fostered high-quality relationships with their students demonstrated respect for their students. Ms. Davis said, “I try to treat them with dignity and respect” (I4 92–93). Mr. Johnson explained that respect included listening to student perspectives and opinions and valuing their input. To do this, he held classroom meetings. Further, Ms. Williams said, “I hope I’m respectful to the students and in turn they are respectful

towards me” (I1 23–24).

This finding is consistent with leader-member exchange theory. As explained by Graen and Uhl-Bien, 1995, higher-quality relationships between leaders and subordinates involve negotiations and are described as demonstrating mutual respect, support, trust, influence, and input in decision making, while lower quality relationships operate under a top-down influence from the leader, provide restricted support for the subordinate, and the interactions are more formal and based on contractual agreements. LMX theory refers to high-quality relationships as mature partnerships. Relationships that evolve into mature partnerships are characterized by leaders relying on followers to provide assistance when necessary or trusting followers, and followers relying on leaders for investment and encouragement (Graen & Uhl-Bien, 1995). The mutual trust, respect, and obligation to one another, which characterizes mature partnerships, serve as empowering and motivating factors to grow beyond formal work roles (Graen & Uhl-Bien, 1995), and result in more effective leadership outcomes (Uhl-Bien & Graen, 1993). In the present study, both teachers and students described high-quality teacher-student relationships as caring, trusting, and respectful.

Implications for Practice

As teachers are leaders of student success, LMX theory and the results of the present study offer multiple implications for teachers. Results of the present study and comments of teachers and students highlight areas where LMX could be emphasized in an educational context. From the qualitative analysis, it was discovered that teacher actions affect student motivation (theme two) and the quality of teacher-student relationships improves with increased interaction (theme four). Certainly, there was a desire from teachers to develop a high quality relationship

with all students. As Graen and Uhl-Bien (1995) explained, there when a leader makes LMX available to all subordinates, there is an increased potential for the development of high quality relationships; however, Othman, Ee, and Shi (2010) highlighted limitations of LMX theory and argued that, in some cases, high-quality LMX could be dysfunctional. Further, antecedents and outcomes of such unhealthy interpersonal interaction within a group were identified (Othman, Ee, & Shi, 2010). Teachers in the present study provided examples of such unhealthy interactions. As Ms. Davis explained, “It can’t be a buddy-buddy relationship in terms of, you know, this is my best friend and we’re going fishing together” (I4 356–57). Interestingly, Mr. Johnson provided an appropriate example. He described: “I’ve had one that got over-familiar and he wound up letting it be a detriment. He thought, you know, I fish with him. I can get by with murder and it did not fare well for him” (I6 329–30). While increase interaction outside of the class can be a positive step toward developing high quality relationships, teachers should use caution and monitor how teacher-student relationships develop to prevent dysfunction.

Existing literature reveals that favoritism by the leader, reliance on impression management by the followers, and perceptions of unfairness may lead to dysfunctional relationships within group settings (Othman, Ee, & Shi, 2010). Othman, Ee, and Shi (2010) proposed that dysfunctional high-quality LMX occurs in accordance with two circumstances: 1) “the flawed assessment of a member by a leader,” (p. 341), and 2) when members “use upward influence tactics to create a favourable impression of themselves” (p. 341). Consideration of these concerns is important when applying LMX theory to an educational context where the teacher is leader and students are followers or subordinates. In regard to favoritism, students were addressed a dislike for treating students differently. Cameron indicated that teachers should be fair to all students if they wanted to develop high quality relationships. When asked for an

example of how a teacher might be unfair, Cameron explained, “Letting students get by with stuff that other students cannot when you obviously know that they’re both doing it. Texting, copying assignments were two big ones that got me or got other people in the class throughout the years” (I3 333–35). Students addressed how some receive preferential treatment from teachers as well. Bailey described one teacher by saying, “I think that you, he maybe is more inclined to some students because of their performance in his class” (I7 253–54). Further, Nat provided this example: “If you do make good grades and you show that you’re trying, then she shows a lot more consideration for you” (I2 131–33). This type of preferential treatment was explained from the quantitative results, where it was indicated that a higher student GPA caused a higher quality LMX from the teacher’s perspective. Also, the third theme from the qualitative analysis substantiated the notion that teachers have a preference for students who excel academically and are well behaved. Because of this, teachers must exercise caution when developing relationships with students and strive to not for initial impressions and expectations that may impact LMX development.

In describing the process through which LMX develops, Ashkanasy and O’Connor (1997) explained that leaders first form initial impressions of followers based on personal and demographic qualities and then evaluate the performance of followers to decide on the quality of exchange that will be developed. In regard to the first stage—forming initial impressions—Taubert (1998) held that teachers form expectations of students often on the first day of school. These impressions may be based on multiple characteristics such as body build, gender, ethnicity, name, or attractiveness, among others (Good, 1987). The present study showed that student GPA directly affected teacher-student relationships from the teacher perspective. Forming an initial impression of students based on student GPA is, yet, another example of how

LMX may manifest in the classroom and should be added to Good's (1987) list of characteristics upon which teachers may base initial impressions of students. Also, Richey and Ysseldyke (1983) explain that previous experience with students may impact teacher impressions and expectations of younger siblings. For example, a teacher might expect the younger sibling of a low academically performing student to be a low performer as well. These claims are concerning for education and the potential impact on the relationships between teachers and students; however, the second stage through which LMX develops—evaluating the performance of followers—deserves attention.

The evaluation of follower performance requires the assessment of a member by a leader. Othman, Ee, and Shi (2010) suggested that faulty evaluation of a follower by a leader could lead to dysfunctional relationships. Flawed assessments may occur due to “the lack of information and opportunity to observe the member” (Othman, Ee, & Shi, 2010, p. 341). Additionally, Dienesch and Liden (1986) warned that leader assessments of followers might be impacted by the halo effect, where those seeming to be strong performers in some regard are treated as if they are strong performers in all aspects. While the under-estimation of follower performance may occur frequently in employment settings, the possibility of such flawed assessments may be decreased in educational settings because quantitative measures, in the form of grades, are typically used to gauge student achievement. However, assigning grades to students is not always equitable when assessments use subjective grading criteria. Even when scoring rubrics are used as a method of standardizing grades, teachers are not immune to mistakes; therefore, issues of intra-rater reliability are of concern. Cameron described a situation with one teacher that points to the detrimental impact of flawed assessments:

This goes back to English. I guess I remember it more because I was not one of her favorites. Like, not even close. And we had a lot of open-ended questions on our test. And some little student that was a little, you know, kiss-ass would write something down that didn't make any sense and she'd mark it right. And someone would just be like a few words or a few details off, whole thing wrong. That was always, that always irked me (I3 335–40).

The first theme from the qualitative analysis explained that the way in which a teacher structures the classroom affects the quality of teacher-student relationships. Undoubtedly, how teachers choose to assess students relates to classroom structuring and teacher actions. Therefore, teachers should identify and employ equitable measures of assessment to prevent student perception of inequity. According to Moskal and Leydens (2000), intra-rater reliability references instances when the scoring process of a rater, in this case the teacher, changes over time, such as when teachers become “fatigued with the scoring process and devote less attention to the analysis over time” (para. 22). Cameron elaborated on the benefit of assessments that were not subjective:

I think that's another good thing about multiple-choice tests. I mean, I'm not going to lie. I like them because they're easy. But there's no gray area. No one can play any favorites. No one can argue with you. You're either right or you're wrong. Whereas with an open-ended test, it's all up to the person grading it (I3 350–54).

The second theme from the qualitative analysis indicated that teacher actions affect student motivation. According to Brophy and Good (1974), teacher-student relationships cause teachers to treat students differently in their classrooms, and inequitable treatment decreases the confidence and aspirations of some students. Therefore, teacher assessments of student

achievement may not always accurate. However, the use of quantitative measures does serve as a deterrent to flawed assessments and decreases the likelihood of followers using upward influence tactics to create favorable impressions. Moreover, Medved and Heisler (2002) reported that, in educational settings, “subordinates are more limited in terms of influence strategies than superiors” (p. 116) and students may not feel that appealing to teacher emotions or values is appropriate behavior.

When flawed assessments of subordinate performance lead to dysfunctional high-quality leader-member relationships, a sense of inequity is created among out-group members (Othman, Ee, & Shi, 2010). While perceived inequity can lead to perceived favoritism, favoritism and preferential treatment is a natural product of high-quality student-teacher relationships (Brophy & Good, 1974). As Mr. Lewis told:

I think it would be natural for them to have a higher quality relationship with me. And it's funny because some, some kids that I probably think that I, if you want to classify a teacher's pet as they get to do more things, that's probably the kids that have exemplified that they have the ability to be able to leave class and come back responsibly (I10 334–37).

Overtly showing favoritism to a group of students, however, is one of the biggest errors a teacher can make (Orange, 2000; Tattleff-Dunn, Dunn, & Gokee, 2002), because this can decrease motivation for students not receiving favoritism. In this regard, then, teachers should be aware of their actions and be cautious of showing favoritism in the classroom because students having low-quality relationships with the teacher may have negative reactions. As social comparison occurs and unfair treatment of members in the out-group becomes significant, commitment to the group and the willingness to exert effort will be reduced (Othman, Ee, & Shi, 2010). Therefore,

the quality of teacher-student relationships from the student perspective can be impacted by perceptions of inequity, and the cohesiveness of students in a classroom may be negatively impacted, especially in cases involving cooperative classroom projects where out-group members may engage in social loafing, as the quality of student-student exchange impacts cooperation with peers (Graen, Hui, & Taylor, 2006). For these reasons, teachers should strive to form high-quality relationships with all students, and as the present study revealed in the fifth theme that emerged from qualitative analysis, treat students equitably and respectfully.

Also of important note are implications for A-I theory in education. According to Jablonsky, Vercellone-Smith, and Richmond (2009), it is highly unlikely that a teacher's cognitive style will match more than a few students in a given class. This was true in the present study. In the present study, the relationships between cognitive gap and teacher-student relationships and student achievement were not statistically significant in the path model. However, because of student comments about conforming to teacher preferences and styles, the researcher suggests that teachers should recognize the diversity of cognitive styles in a classroom and be mindful of such diversity when organizing lessons and crafting the classroom culture and environment. Student disagreement about classroom structure points to the importance of this implication. While Nat said about one class, "Like it's a very strict—I like boundaries" (I2 28), Cameron detailed, "I like structure. But that doesn't necessarily mean it has to be, like, strict, unreasonable" (I3 381–82). Ms. Davis, who creates a very structured environment in her classroom, spoke about why some students liked her class and others didn't. She said, "We each have different personality types and one teacher may be a little firmer and a little stricter in a completely structured environment that a particular kid would be drawn to" (I4 172–74). Kirton (2003) explained that cognitive style was related to personality, and the first theme from the

qualitative analysis indicated that the way in which a teacher structures the classroom affects the quality of teacher-student relationships. This suggestion echoes the position of Wolk, Schmidt, and Sweeney (1997), who cautioned instructors from limiting delivery of course content to teaching methods with which they were most comfortable because coursework appeal for the majority of students could be limited. Varying course content delivery to match multiple cognitive styles could make courses more engaging. Providing flexibility in classroom structure could mediate potential negative effects of cognitive gap between teachers and students.

Recommendations for Future Research

Based on data analysis and a synthesis of the findings, the researcher recommends three specific areas for future inquiry related to leader-member exchange and cognitive style in secondary educational settings: (a) investigate the impacts of leader-member exchange and cognitive style on student achievement using alternative indicators of student achievement; (b) explore how involvement in a CTSO interacts with teacher-student relationships and student achievement through the lens of leader-member exchange; and (c) examine the impacts of leader-member exchange and cognitive style on student achievement outside of the context of career and technical education (CTE). Each recommendation for future research is addressed.

The researcher endorses future investigation of the impacts of leader-member exchange and cognitive style on student achievement using alternative indicators of student achievement. In the present study, student scores on a state-administered standardized test represented student achievement. In secondary education, and most certainly in CTE, there are multiple indicators of student achievement including formative and summative assessment measures made by teachers,

performance-based measures where students demonstrate achievement through practical application, and culminating scores in the form of semester grades that represent student achievement throughout the course of a semester. Because student GPA was shown to be a predictor of student achievement, the researcher feels it is important to consider from where a student's GPA is derived: semester grades. The researcher acknowledges that including semester grades into the model would subject the measure of student achievement to teacher subjectivity; however, consideration of student performance on classroom assignments is critical to a greater understanding of the potential impact that leader-member exchange has on student achievement. Cameron hinted that semester average could be related to leader-member exchange when he said, "If I like a teacher, I'm going to try to please them more than if I don't, I'm going to try to make a 70" (I3 79–80). Nat's comments further supported this notion when she said, "Some teachers, like one of my teachers, I don't like her. And so I'm not doing so good in that class" (I2 175–76). Statements such as these point to the need for investigation of leader-member exchange and cognitive style using alternative indicators of student achievement.

The researcher suggests exploring how involvement in a CTSO interacts with teacher-student relationships and student achievement through the lens of leader-member exchange. This recommendation is derived from qualitative data analysis and previous research. During the interviews, teachers and students attributed much of teacher-student relationship development to student involvement in a CTSO. Ms. Davis said, "The students that are actively involved in our youth organization, the FFA, obviously are going to spend more time beyond the class time than the kids who are marginally involved or not at all" (I4 128–30), adding, "I think you're naturally going to build a stronger rapport with those students" (I4 136). Ms. Williams noted, "I do have more interaction with my HOSA, and we've traveled all over" (I1 207–08). Of Ms. Williams,

Dakota said, “If you do [CTSO] and, like the more you get to know her, but if you don’t, it’s like just class, and you leave” (I8 257–58). Additionally, Sidney spoke about how being a member of [CTSO] allowed students to get to know a teacher better. He said, “Before they may have participated in [CTSO] and may have, like, got to know her better than some people, where some people have taken her class that’s new” (I9 247–49). While CTSO involvement was included in the measure of dyadic intensity, qualitative data combined with previous research suggests that CTSO involvement could stand alone as a dimension of teacher-student relationships in CTE.

Lastly, the researcher encourages an examination of the effects of leader-member exchange and cognitive style on student achievement outside the context of CTE. CTE students experience coursework and learn skills that are applicable in the workforce beyond high school through an experiential approach (Stone & Alfeld, 2004). Because of the nature of teacher-student interaction required in CTE courses, teacher-student relationships may develop in a different manner, given the increased frequency of one-on-one coaching and feedback required in CTE classes. CTE naturally lends itself to a more student-centered, authentic approach to instruction (Newman & Wehlage, 1995), whereas other secondary education coursework may not. As leader-member exchanges may manifest differently outside the context of CTE, investigating effects of leader-member exchange and cognitive style on student achievement in non-CTE classes is necessary to advance an understanding of the phenomenon.

Summary

The final chapter of this dissertation reviewed the research problem, population and sample, and methodology of the present study. Further, this chapter summarized results of the

study, identified limitations, discussed the significance of results, presented implications for practice, and gave direction for future research.

The research presented in this dissertation was an embedded sequential explanatory case study, a quantitative→qualitative two-strand design of inquiry approach. The purpose of this study was to explain how teacher-student relationships and cognitive style effect student achievement. The population for this study encompassed the teachers and students in the CTE department of a suburban high school in western North Carolina. The quantitative participant sample comprised 11 career and technical education (CTE) teachers and 210 CTE students.

The qualitative strand of inquiry involved two subgroups of participants: teacher participants and student participants. Twelve participants were selected for the qualitative strand, four teachers and eight students. Data for the quantitative strand were collected using the Kirton Adaption-innovation Inventory (KAI), a researcher-developed survey for measuring dyadic intensity, the Leader-Member Excellence-Shared-Leadership Exchange (LMX-SLX) instrument, and a standardized end-of-course test. Data for the qualitative strand were collected through in-depth, semi-structured interviews using open-ended questions following an interview guide.

The findings of the study related to the perceived quality of teacher-student relationships and student achievement. A higher student GPA caused a higher-quality teacher-student relationship from the teacher's perspective. A higher student GPA caused a higher-quality teacher-student relationship from the student perspective. A higher-quality teacher-student relationship from the teacher perspective caused a higher-quality teacher-student relationship from the student perspective. Student grade point average not only had a direct effect on student LMX, but also had an indirect effect on student LMX through teacher LMX, which increased the

total effect of student GPA on teacher LMX. A higher student GPA caused higher student achievement. High-quality teacher-student relationships are nurtured when teachers demonstrate care, trust, and respect for students.

The implications for the findings related to leader-member exchange and cognitive style provide direction for teachers as they work with students. Teachers should strive to form high-quality relationships with all students and treat students equitably and respectfully. Also, teachers should recognize the diversity of cognitive styles in a classroom and be mindful of such diversity when organizing lessons and crafting the classroom culture and environment.

The researcher recommended three areas for future research. It was recommended to investigate the impacts of leader-member exchange and cognitive style on student achievement using alternative indicators of student achievement. The researcher suggested an exploration of how involvement in a career and technical student organization (CTSO) interacts with teacher-student relationships and student achievement through the lens of leader-member exchange. Finally, it was recommended to examine the impacts of leader-member exchange and cognitive style on student achievement outside of the context of CTE.

The present study revealed that the quality of teacher-student relationships from both the teacher's perspective and the student's perspective are affected by a student's grade point average. Further, student grade point average has a significant effect on student achievement. The present study was a pioneer investigation into the effects of teacher-student relationships and cognitive style on student achievement. Much remains unknown about the antecedents of teacher-student relationships and how relationships between teachers and students may interact with student achievement. While the present study initiated work on this important

phenomenon, continued research efforts regarding teacher-students relationships are essential to better develop teachers as leaders in the classroom.

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Appendix A – Examples of Kirton’s Adaption-Innovation Inventory

EXAMPLE ITEMS OF KIRTON'S ADAPTION-INNOVATION INVENTORY

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

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

The Kirton's Adaption-Innovation Inventory (KAI) is a copyrighted questionnaire and used with permission. For information regarding the KAI, please contact:

KAI Distribution Centre
55 Heronsgate Rd
Chorleywood
Hertfordshire WD3 5BA
UK

Telephone: 01923 286999 (From USA: 01144-192-328-6999)
Fax: 0870 0527901 (From USA: 01144-870-052-7901)
E-mail: dist@kaicentre.com

Appendix B – Researcher-Developed Student Survey

Student Name (print) _____

Teacher (print) _____

Period _____

This questionnaire will assess the degree of interaction you have with your teacher outside of the regular classroom and gather demographic information about you. Bubble in or place an "X" on the line when appropriate.

1. Are you a member of <u>Insert Name of CTSO</u> ?	☐ No (if no, proceed to question #9) ☐ Yes
2. Do you serve as an <u>Insert Name of CTSO</u> officer?	☐ No (if no, proceed to question #4) ☐ Yes
3. If you answered yes to the previous question, check each level at which you are CURRENTLY serving as a <u>Insert Name of CTSO</u> officer (CHECK ALL THAT APPLY):	☐ Local / Chapter (at the school level only) ☐ Federation ☐ Region ☐ State ☐ National ☐ Other (explain) _____
4. Please indicate the number of <u>Insert Name of CTSO</u> competitions that you have participated in at each level during the current school year (place 0's by all levels in which you did not participate):	_____ Federation _____ Region _____ State _____ National _____ Other (explain) _____
5. Please indicate the number of <u>Insert Name of CTSO</u> fundraisers in which you have participated during the current school year:	_____ fundraisers
6. Please indicate the number of additional <u>Insert Name of CTSO</u> before/after school activities, excluding trips and competitions , that you have participated in during the current school year (Additional <u>Insert Name of CTSO</u> activities might include attending a meeting after school, participating in community service activities, etc.):	_____ <u>Insert Name of CTSO</u> before/after school activities
7. Please indicate the number of nights you have spent on <u>Insert Name of CTSO</u> overnight trips taken with <u>Teacher</u> during the current school year at each level:	_____ nights
8. Please indicate the number of non-overnight <u>Insert Name of CTSO</u> trips have you taken with <u>Teacher</u> during the current school year (do not include class field trips) such as workshops, conferences, etc.:	_____ <u>Insert Name of CTSO</u> non-overnight trips
9. Do you know <u>teacher</u> in any capacity other than as your teacher (for example, attending the same church, family friend, athletic sports team coach, etc.)?	☐ No (if no, proceed to question #11) ☐ Yes

10. If you answered yes to the previous question, how many years have you known Teacher (use whole numbers such as “7”; do not use half numbers such as “6.5”)? _____

In the space below, please explain how you know Teacher other than as your teacher (use one or two word responses such as “church” or “football coach”):

11. Including the class you are currently in, how many classes have you taken where teacher was the teacher?

_____ Classes

12. Which of the following reasons explains why you are enrolled in teacher's class?
- ☐ I requested / registered for the class
- ☐ The class was placed on my schedule

13. What is your current age?

- | | |
|--------------------------|--------------------------|
| ☐ 13 | ☐ 17 |
| ☐ 14 | ☐ 18 |
| ☐ 15 | ☐ 19 |
| ☐ 16 | |

14. What is your sex?

- ☐ Female
- ☐ Male

15. To which of the following ethnic or racial groups do you belong?

- | | |
|--|---|
| ☐ Hispanic / Latino of any race | ☐ Native Hawaiian or Pacific Islander |
| ☐ American Indian or Alaska Native | ☐ White |
| ☐ Asian | ☐ Two or more races |
| ☐ Black or African American | |

16. Please write in your actual grade point average (GPA) and then indicate which of the following best describes your grades throughout all of high school (NOT just this class and NOT just this year):

- | | |
|---|---|
| ☐ Mostly A's | ☐ About half C's and half D's |
| ☐ About half A's and half B's | ☐ Mostly D's |
| ☐ Mostly B's | ☐ About half D's and half F's |
| ☐ About half B's and half C's | ☐ Mostly F's |
| ☐ Mostly C's | |

17. What is your current GPA? _____ (eg. 2.7)

18. In addition to this survey, we will be conducting interviews to explore how teacher-student relationships are developed and impact student achievement. ***Would you be willing to participate in an interview regarding this topic?*** If so, the interview will take approximately 20 – 30 minutes.
- ☐ No
- ☐ Yes

Appendix C – Researcher-Developed Teacher Survey

Teacher Name (print) _____

This questionnaire contains items that will assess the degree of interaction you have with your teacher outside of the regular classroom and gather demographic information about you. Place an “X” in the bubble or line when appropriate.

1. How many years have you taught (including the current year)?	_____ years
2. Which best describes your primary CTE discipline?	☐ Agricultural Education ☐ Business and Information Technology ☐ Career Development ☐ Family and Consumer Sciences ☐ Health Occupations ☐ Marketing ☐ Technology ☐ Trade and Industrial
3. What is the highest level of education you have completed?	☐ Bachelor’s degree ☐ Master’s degree ☐ Specialist’s degree ☐ Doctoral degree ☐ Other (explain) _____
4. Which best describes the type of teacher preparation program you completed?	☐ Traditional teacher preparation program ☐ Alternatively certified teacher
5. What is your current age?	_____ years
6. What is your sex?	☐ Female ☐ Male
7. To which of the following ethnic or racial groups do you belong?	☐ Hispanic / Latino of any race ☐ American Indian or Alaska Native ☐ Asian ☐ Black or African American ☐ Native Hawaiian or Pacific Islander ☐ White ☐ Two or more races
8. In addition to this survey, we will be conducting interviews to explore how teacher-student relationships are developed and impact student achievement. <i>Would you be willing to participate in an interview regarding this topic?</i> If so, the interview will take approximately 20 – 30 minutes.	☐ Yes ☐ No

Appendix D – Student LMX–SLX

Student Name (print) _____

Teacher (print) _____ Period _____

This questionnaire contains items that ask you to describe your relationship with your teacher. For each of the ten questions, the responses are: Strongly Disagree = 1, Disagree = 2, Don't Know = 3, Agree = 4, and Strongly Agree = 5. The ten questions are as follows:

1. **My teacher is satisfied with my work.** ☐

Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree
1	2	3	4	5
2. **My teacher will repay a favor.** ☐

Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree
1	2	3	4	5
3. **My teacher would help me with my school problems.** ☐

Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree
1	2	3	4	5
4. **My teacher will return my help.** ☐

Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree
1	2	3	4	5
5. **My teacher has confidence in my ideas.** ☐

Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree
1	2	3	4	5
6. **My teacher and I have a mutually helpful relationship.** ☐

Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree
1	2	3	4	5
7. **My teacher has trust that I would carry my workload.** ☐

Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree
1	2	3	4	5
8. **My teacher is one of my leaders.** ☐

Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree
1	2	3	4	5
9. **My teacher has respect for my capabilities.**

Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree
1	2	3	4	5
10. **I have an excellent working relationship with my teacher.** ☐

Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree
1	2	3	4	5

Appendix E – Teacher LMX–SLX

Teacher Name _____

Student Name (print) _____

Period _____

This questionnaire contains items that ask you to describe the individual relationship with each of your students. For each of the ten questions, the responses are: Strongly Disagree = 1, Disagree = 2, Don't Know = 3, Agree = 4, and Strongly Agree = 5. The ten questions are as follows:

- 1. My student is satisfied with my work.** ☐
Strongly Disagree Disagree Don't Know Agree Strongly Agree
1 2 3 4 5
- 2. My student will repay a favor.** ☐
Strongly Disagree Disagree Don't Know Agree Strongly Agree
1 2 3 4 5
- 3. My student would help me with my job problems.** ☐
Strongly Disagree Disagree Don't Know Agree Strongly Agree
1 2 3 4 5
- 4. My student will return my help.** ☐
Strongly Disagree Disagree Don't Know Agree Strongly Agree
1 2 3 4 5
- 5. My student has confidence in my ideas.** ☐
Strongly Disagree Disagree Don't Know Agree Strongly Agree
1 2 3 4 5
- 6. My student and I have a mutually helpful relationship.** ☐
Strongly Disagree Disagree Don't Know Agree Strongly Agree
1 2 3 4 5
- 7. My student has trust that I would carry my workload.** ☐
Strongly Disagree Disagree Don't Know Agree Strongly Agree
1 2 3 4 5
- 8. My student is one of my leaders.** ☐
Strongly Disagree Disagree Don't Know Agree Strongly Agree
1 2 3 4 5
- 9. My student has respect for my capabilities.**
Strongly Disagree Disagree Don't Know Agree Strongly Agree
1 2 3 4 5
- 10. I have an excellent working relationship with my student.** ☐
Strongly Disagree Disagree Don't Know Agree Strongly Agree
1 2 3 4 5

Appendix F – Permission To Use LMX-10 (LMX-SLX)

Re: Requesting Permission to use LMX-7 in Doctoral Dissertation
From: Lmxlotus@aol.com [Lmxlotus@aol.com]
Sent: Friday, September 23, 2011 7:54 PM
To: Mosley, Chaney

Dear Chaney,

You have my permission to use LMX-10 in *Predator's Game Changing Designs* for your doctoral dissertation. Please send me a short summary when completed. Also, I'm attaching the latest statement of LMX theory for your use. It would be a contribution to compare the same students ratings of different teachers. I bet the students have similar ratings across teachers and the better students have the higher average scores.

Cheers,

George
/jag

In a message dated 9/21/2011 9:38:21 P.M. Pacific Daylight Time, cmosley@exchange.vt.edu writes:
Dr. George Graen,

Hello, my name is Chaney Mosley and I am a doctoral candidate at Virginia Tech University in Blacksburg, Virginia. I am working toward a Ph.D. in Life Sciences, with a major in Agricultural Education. Specifically, I am interested in the leadership of teachers and my dissertation proposal focuses on the effects of the quality of relationships between teachers and students on student performance. I plan to examine this topic by using a mixed methods approach where I will quantitatively measure the effects of the quality of relationships on student performance and qualitatively (through interviews) investigate how the different quality relationships manifest in a secondary classroom setting. I am drawn to Leader-Member Exchange theory because of its descriptive and prescriptive nature and, with your permission, would like to use the LMX-7 for the quantitative measure of dyadic relationship quality. In addition to learning about LMX theory from various leadership texts and journal articles, I have also purchased and read five volumes in LMX Leadership: The Series and am excited about applying the theory to an educational setting. I plan on using a case study approach where the population sample will come from one high school, involving five or more teachers (leaders) and students from one class of each teacher (members).

It would be a pleasure to provide you with a summary of my results. In my review of the literature, I have not come across any studies that use LMX to investigate teacher-student dyadic relationships, with the exception of one article that investigated college students and professors. Additionally, I have read articles that studied the dyadic relationships between high school teachers and their principals, but not teachers and their students. If you are aware of any studies that focus on the secondary education level regarding the dyadic relationships between teachers and students, I would appreciate any information on where I might locate them.

Thank you for your time and consideration. I look forward to hearing from you.

Sincerely,

Chaney

Chaney Mosley
Agricultural Extension & Education
Virginia Tech University

Appendix G – Teacher Consent Form

Informed Consent for Participants in Research Projects Involving Human Subjects Teacher Consent Form

Title of Project: The Effects of Leader-member Exchange and Cognitive Style on Student Achievement: A Mixed Methods Case Study of Teacher-student Dyads

Investigators: Dr. Thomas Broyles, Assistant Professor, Virginia Tech
Chaney Mosley, Graduate Student, Virginia Tech

I. What is this study about?

Throughout the duration of a course, high school teachers interact with students daily . These interactions do not only occur inside the walls of the classroom; often, teachers interact with students outside of the classroom as well. Through the variety of interactions, teachers and students develop a relationship, and the quality of these relationships may have a n effect on student achievement. The goal of this study is to analyze the quality of teacher-student relationships and student academic performance to determine how teacher-student relationships effect student achievement . We hope that by studying this phenomenon we can better understand how teacher-student relationships evolve and impact student academic performance.

II. Why have you been asked to participate in this study ?

Research involving Career and Technical Education (CTE) teachers and students at the high school is limited, especially in regard to student achievement. This is largely due to the lack of standardized measures of student performance. You were chosen for this study because of the subject you teach and because of the end of course test required of CTE students in North Carolina. As A CTE teacher, it is valuable to the practice of CTE to have a better understanding of what impacts student performance and your perspectives on teacher-student relationships are valuable to that conversation.

III. What are the procedures for the study?

First, read this form thoroughly and if you agree to participate in the study sign the bottom of the form and return it to the researcher.

You will be asked to provide information about the classes you teach including the number of students in each class, the associated Career and Technical Student Organization (CTSO), and your class schedule. Next, you will be asked to complete a series of questionnaires aimed at measuring the quality of the relationship with your students. Also, you will be asked to provide measures of your student's academic performance including course and exam grades. Additionally, you may be asked to complete an interview with the researchers about your experience as a CTE teacher. Interviews will be audio recorded and are expected to last from 20 – 30 minutes. No identifying characteristics of you or your students will be shared, including names or other potentially identifiable information . After preparing a final report, information will be shared at educational conferences, in educational journals, and through oral and written presentations geared toward educators.

IV. This study is voluntary.

This study is completely voluntary. You are not required to participate. However, if you agree to participate, you will receive compensation after completing the first part of the study in the form of a \$25.00 Visa gift card. There is no consequence for not participating.

V. What are the potential benefits and potential risks of the study?

Virginia Tech Institutional Review Board Project No. 11-1005
Approved November 22, 2011 to November 21, 2012

Benefits: The results of the study will be shared with other teachers and other education professionals. Results of the study may provide a greater understanding of the potential impact that teacher-student relationships have on student achievement and aid in understanding how high quality teacher-student relationships are formed. Findings may improve teaching practice and teacher preparation.

Risks: There are no more than minimal risks involved with participating in this study. You will not be punished for not participating in the study. Your identity will be protected at all times.

VI. Participants have the freedom to withdraw.

You are free to withdraw from the study at any time without any consequences. To withdraw from the study, please contact the researchers by phone or email.

VII. Extent of Anonymity and Confidentiality

Protecting your identity is a top priority of this study. As a participant in this research project, your information will be kept strictly confidential. Participants will be identified in reports by pseudonyms. At no time will information be released that allows an individual to be identified. At no time will the researchers release data to anyone other than individuals working on the project without your written consent. It is possible that the Institutional Review Board (IRB) may view this study's collected data for auditing purposes. The Virginia Tech Institutional Review Board is responsible for the oversight of the protection of human subjects involved in research.

VIII. What questions do you have?

If you have questions about this study, feel free to contact Dr. Thomas Broyles by phone at (540) 231-8188 or by e-mail at tbroyles@vt.edu or Mr. Chaney Mosley by phone at (502) 649-4325 or by e-mail at cmosley@vt.edu. You may also contact the Virginia Tech Institutional Review Board Chair, Dr. David M. Moore. His phone number is (540) 231-4991 and email address is moored@vt.edu.

-

Parent or Legal Guardian Permission

I have read and understand the Consent and the conditions of this project. I have had all of my questions answered. I hereby acknowledge the above and give my voluntary consent:

_____ YES _____ NO

Teacher's Name (please print)

Teacher's Signature

Date

Appendix H – Minor Student Assent Form

Informed Assent for Participants in Research Projects Involving Human Subjects Minor Assent Form

Title of Project: The Effects of Leader-member Exchange and Cognitive Style on Student Achievement: A Mixed Methods Case Study of Teacher-student Dyads

Investigators: Dr. Thomas Broyles, Assistant Professor, Virginia Tech
Chaney Mosley, Graduate Student, Virginia Tech

I. What is this study about?

Throughout the duration of a course, high school teachers interact with students daily. These interactions do not only occur inside the walls of the classroom; often, teachers interact with students outside of the classroom as well. Through the variety of interactions, teachers and students develop a relationship, and the quality of these relationships may have an effect on student achievement. The goal of this study is to analyze the quality of teacher-student relationships and student academic performance to determine how teacher-student relationships effect student achievement. We hope that by studying this phenomenon we can better understand how teacher-student relationships evolve and impact student academic performance.

II. Why have you been asked to participate in this study ?

Career and Technical Education (CTE) teachers at your high school are participating in this study. Students in some of the CTE classes at your high school are being asked to participate as well. If you have been asked to participate, you are enrolled in one of the CTE classes at your high school in which the teacher is participating in the study.

III. What are the procedures for the study?

First, read this form thoroughly and if you agree to participate in the study sign the bottom and return the form to your CTE teacher. Also, have your parents sign the parental consent form and return this to your teacher as well.

After receiving the forms, you will be asked to complete a series of questionnaires aimed at measuring the quality of the relationship with your teacher. Also, your teacher will be asked to provide measures of your academic performance including course and exam grades. Additionally, you may be asked to complete an interview with the researchers about your experience as a student in your teacher's class. Interviews will be audio recorded and are expected to last from 20 – 30 minutes. No identifying characteristics of students will be shared, including names or other potentially identifiable information. After preparing a final report, information will be shared at educational conferences, in educational journals, and through oral and written presentations geared toward educators.

IV. This study is voluntary.

This study is completely voluntary. You are not required to participate. You will not receive compensation if you participate in the first part of the study; however, those students selected to participate in the interview will receive a gift card in the amount of \$10.00. There is no consequence for not participating.

V. What are the potential benefits and potential risks of the study?

Virginia Tech Institutional Review Board Project No. 11-1005
Approved November 22, 2011 to November 21, 2012

Benefits: The results of the study will be shared with other teachers and other education professionals. Results of the study may provide a greater understanding of the potential impact that teacher-student relationships have on student achievement and aid in understanding how high quality teacher-student relationships are formed. Findings may improve teaching practice and teacher preparation.

Risks: There are no more than minimal risks involved with you participating in this study. You will not be punished for not participating in the study. Your identity will be protected at all times.

VI. You have the freedom to withdraw.

You are free to withdraw from the study at any time without any consequences. To withdraw from the study, please contact the researchers by phone or email.

VII. Extent of Anonymity and Confidentiality

Protecting your identity is a top priority of this study. As a participant in this research project, your information will be kept strictly confidential. Participants will be identified in reports by pseudonyms. At no time will information be released that allows an individual to be identified. At no time will the researchers release data to anyone other than individuals working on the project without your written consent. It is possible that the Institutional Review Board (IRB) may view this study's collected data for auditing purposes. The Virginia Tech Institutional Review Board is responsible for the oversight of the protection of human subjects involved in research.

VIII. What questions do you have?

If you have questions about this study, feel free to contact Dr. Thomas Broyles by phone at (540) 231-8188 or by email at tbroyles@vt.edu. You may also contact the Virginia Tech Institutional Review Board Chair, Dr. David M. Moore. His phone number is (540) 231-4991 and email address is moored@vt.edu.

-

Participant's Permission

I have read and understand the Assent and the conditions of this project. I have had all of my questions answered. I hereby acknowledge the above and give my voluntary assent:

_____ YES _____ NO

Student Name (please print)

Student Signature

Date

Appendix I – Parental Consent Form

Informed Consent for Participants in Research Projects Involving Human Subjects Parent/Guardian Permission Form

Title of Project: The Effects of Leader-member Exchange and Cognitive Style on Student Achievement: A Mixed Methods Case Study of Teacher-student Dyads

Investigators: Dr. Thomas Broyles, Assistant Professor, Virginia Tech
Chaney Mosley, Graduate Student, Virginia Tech

I. What is this study about?

Throughout the duration of a course, high school teachers interact with students daily . These interactions do not only occur inside the walls of the classroom; often, teachers interact with students outside of the classroom as well. Through the variety of interactions, teachers and students develop a relationship, and the quality of these relationships may have an effect on student achievement. The goal of this study is to analyze the quality of your son/daughter's relationship with his/her teacher and your son/daughter's academic performance to determine how teacher-student relationships effect student achievement. We hope that by studying this phenomenon we can better understand how teacher-student relationships evolve and impact student academic performance.

II. Why has your child been asked to participate in this study?

Career and Technical Education (CTE) teachers at your son/daughter's high school are participating in this study. Students in some of the CTE classes at your son/daughter's high school are being asked to participate as well. If your son/daughter has been asked to participate, he/she is enrolled in one of the CTE classes at his/her high school in which his/her teacher is participating in the study.

III. What are the procedures for the study?

First, read this form thoroughly and if you agree that your child may participate in the study sign the bottom and have your son/daughter return the form to his/her teacher.

After receiving the forms, your child will be asked to complete a series of questionnaires aimed at measuring the quality of the relationship with his/her teacher. Also, your son/daughter's teacher will be asked to provide measures of your son/daughter's academic performance including course and exam grades. Additionally, your child may be asked to complete an interview with the researchers about his/her experience as a student in the teacher's class. Interviews will be audio recorded and are expected to last from 20 – 30 minutes. No identifying characteristics of students will be shared, including names of your child or other potentially identifiable information . After preparing a final report, information will be shared at educational conferences, in educational journals, and through oral and written presentations geared toward educators.

IV. This study is voluntary.

This study is completely voluntary. Your child is not required to participate. He or she will not receive compensation if he or she participates in the first part of the study; however, those students selected to participate in the interview will receive a gift card in the amount of \$10.00. There is no consequence for not participating.

V. What are the potential benefits and potential risks of the study?

Virginia Tech Institutional Review Board Project No. 11-1005
Approved November 22, 2011 to November 21, 2012

Benefits: The results of the study will be shared with other teachers and other education professionals. Results of the study may provide a greater understanding of the potential impact that teacher-student relationships have on student achievement and aid in understanding how high quality teacher-student relationships are formed. Findings may improve teaching practice and teacher preparation.

Risks: There are no more than minimal risks involved with your child participating in this study. Your child will not be punished for not participating in the study. His/her identity will be protected at all times.

VI. Participants have the freedom to withdraw.

Your child is free to withdraw from the study at any time without any consequences. To withdraw from the study, please contact the researchers by phone or email.

VII. Extent of Anonymity and Confidentiality

Protecting your child's identity is a top priority of this study. As a participant in this research project, your child's information will be kept strictly confidential. Participants will be identified in reports by pseudonyms. At no time will information be released that allows an individual to be identified. At no time will the researchers release data to anyone other than individuals working on the project without your written consent. It is possible that the Institutional Review Board (IRB) may view this study's collected data for auditing purposes. The Virginia Tech Institutional Review Board is responsible for the oversight of the protection of human subjects involved in research.

VIII. What questions do you have?

If you have questions about this study, feel free to contact Dr. Thomas Broyles by phone at (540) 231-8188 or by e-mail at tbroyles@vt.edu or Mr. Chaney Mosley by phone at (502) 649-4325 or by e-mail at cmosley@vt.edu. You may also contact the Virginia Tech Institutional Review Board Chair, Dr. David M. Moore. His phone number is (540) 231-4991 and email address is moored@vt.edu.

-

Parent or Legal Guardian Permission

I have read and understand the permission form and the conditions of this project. I have had all of my questions answered. I hereby acknowledge the above and give my voluntary permission:

_____ YES _____ NO

Child Name (please print)

Parent Name (please print)

Parent/Guardian Signature

Date

Virginia Tech Institutional Review Board Project No. 11-1005
Approved November 22, 2011 to November 21, 2012

Appendix J – Non-minor Student Consent Form

Informed Consent for Participants in Research Projects Involving Human Subjects Non-Minor Student Consent Form

Title of Project: The Effects of Leader-member Exchange and Cognitive Style on Student Achievement: A Mixed Methods Case Study of Teacher-student Dyads

Investigators: Dr. Thomas Broyles, Assistant Professor, Virginia Tech
Chaney Mosley, Graduate Student, Virginia Tech

I. What is this study about?

Throughout the duration of a course, high school teachers interact with students daily. These interactions do not only occur inside the walls of the classroom; often, teachers interact with students outside of the classroom as well. Through the variety of interactions, teachers and students develop a relationship, and the quality of these relationships may have an effect on student achievement. The goal of this study is to analyze the quality of teacher-student relationships and student academic performance to determine how teacher-student relationships effect student achievement. We hope that by studying this phenomenon we can better understand how teacher-student relationships evolve and impact student academic performance.

II. Why have you been asked to participate in this study ?

Career and Technical Education (CTE) teachers at your high school are participating in this study. Students in some of the CTE classes at your high school are being asked to participate as well. If you have been asked to participate, you are enrolled in one of the CTE classes at your high school in which the teacher is participating in the study.

III. What are the procedures for the study?

First, read this form thoroughly and if you agree to participate in the study sign the bottom and return the form to your CTE teacher.

After receiving the forms, you will be asked to complete a series of questionnaires aimed at measuring the quality of the relationship with your teacher. Also, your teacher will be asked to provide measures of your academic performance including course and exam grades. Additionally, you may be asked to complete an interview with the researchers about your experience as a student in your teacher's class. Interviews will be audio recorded and are expected to last from 20 – 30 minutes. No identifying characteristics of students will be shared, including names or other potentially identifiable information. After preparing a final report, information will be shared at educational conferences, in educational journals, and through oral and written presentations geared toward educators.

IV. This study is voluntary.

This study is completely voluntary. You are not required to participate. You will not receive compensation if you participate in the first part of the study; however, those students selected to participate in the interview will receive a gift card in the amount of \$10.00. There is no consequence for not participating.

V. What are the potential benefits and potential risks of the study?

Benefits: The results of the study will be shared with other teachers and other education professionals. Results of the study may provide a greater understanding of the potential impact that teacher-student

relationships have on student achievement and aid in understanding how high quality teacher-student relationships are formed. Findings may improve teaching practice and teacher preparation.

Risks: There are no more than minimal risks involved with you participating in this study. You will not be punished for not participating in the study. Your identity will be protected at all times.

VI. You have the freedom to withdraw.

You are free to withdraw from the study at any time without any consequences. To withdraw from the study, please contact the researchers by phone or email.

VII. Extent of Anonymity and Confidentiality

Protecting your identity is a top priority of this study. As a participant in this research project, your information will be kept strictly confidential. Participants will be identified in reports by pseudonyms. At no time will information be released that allows an individual to be identified. At no time will the researchers release data to anyone other than individuals working on the project without your written consent. It is possible that the Institutional Review Board (IRB) may view this study's collected data for auditing purposes. The Virginia Tech Institutional Review Board is responsible for the oversight of the protection of human subjects involved in research.

VIII. What questions do you have?

If you have questions about this study, feel free to contact Dr. Thomas Broyles by phone at (540) 231-8188 or by email at tbroyles@vt.edu. You may also contact the Virginia Tech Institutional Review Board Chair, Dr. David M. Moore. His phone number is (540) 231-4991 and email address is moored@vt.edu.

-

Participant's Permission

I have read and understand the Consent and the conditions of this project. I have had all of my questions answered. I hereby acknowledge the above and give my voluntary consent:

_____ YES _____ NO

Student Name (please print)

Student Signature

Date

Appendix K – Virginia Tech IRB Memorandum



VirginiaTech

Office of Research Compliance
Institutional Review Board
2000 Kraft Drive, Suite 2000 (0497)
Blacksburg, Virginia 24060
540/231-4606 Fax 540/231-0959
e-mail irb@vt.edu
Website: www.irb.vt.edu

MEMORANDUM

DATE: November 23, 2011

TO: Thomas W. Broyles, Chaney Mosley

FROM: Virginia Tech Institutional Review Board (FWA00000572, expires May 31, 2014)

PROTOCOL TITLE: The Effects of Leader-Member Exchange and Cognitive Style on Student Achievement: A Mixed Methods Case Study of Teacher - Student Dyads

IRB NUMBER: 11-1005

Effective November 22, 2011, the Virginia Tech IRB Chair, Dr. David M. Moore, approved the new protocol for the above-mentioned research protocol.

This approval provides permission to begin the human subject activities outlined in the IRB-approved protocol and supporting documents.

Plans to deviate from the approved protocol and/or supporting documents must be submitted to the IRB as an amendment request and approved by the IRB prior to the implementation of any changes, regardless of how minor, except where necessary to eliminate apparent immediate hazards to the subjects. Report promptly to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

All investigators (listed above) are required to comply with the researcher requirements outlined at <http://www.irb.vt.edu/pages/responsibilities.htm> (please review before the commencement of your research).

PROTOCOL INFORMATION:

Approved as: **Expedited, under 45 CFR 46.110 category(ies) 5, 6, 7**

Protocol Approval Date: **11/22/2011**

Protocol Expiration Date: **11/21/2012**

Continuing Review Due Date*: **11/7/2012**

*Date a Continuing Review application is due to the IRB office if human subject activities covered under this protocol, including data analysis, are to continue beyond the Protocol Expiration Date.

FEDERALLY FUNDED RESEARCH REQUIREMENTS:

Per federal regulations, 45 CFR 46.103(f), the IRB is required to compare all federally funded grant proposals / work statements to the IRB protocol(s) which cover the human research activities included in the proposal / work statement before funds are released. Note that this requirement does not apply to Exempt and Interim IRB protocols, or grants for which VT is not the primary awardee.

The table on the following page indicates whether grant proposals are related to this IRB protocol, and which of the listed proposals, if any, have been compared to this IRB protocol, if required.

Invent the Future

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY
An equal opportunity, affirmative action institution

Date*	OSP Number	Sponsor	Grant Comparison Conducted?

*Date this proposal number was compared, assessed as not requiring comparison, or comparison information was revised.

If this IRB protocol is to cover any other grant proposals, please contact the IRB office (irbadmin@vt.edu) immediately.

cc: File