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Academic Interventions in Secondary Schools: Examining Teachers' Perceptions of Implementing a Multi-Tiered System of Support

Shannon Mortrud

ACADEMIC INTERVENTIONS IN SECONDARY SCHOOLS: EXAMINING TEACHERS' PERCEPTIONS OF IMPLEMENTING A MULTI-TIERED SYSTEM OF SUPPORT

by

Shannon Mortrud
Bachelor of Science, University of North Dakota, 2007
Master of Science, Minnesota State University Moorhead, 2009
Specialist in Psychology, Minnesota State University Moorhead, 2010

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This dissertation, submitted by Shannon Marie Mortrud in partial fulfillment of the requirements for the Degree of Doctor of Philosophy from the University of North Dakota, has been read by the Faculty Advisory Committee under whom the work has been done and is hereby approved.

Sherryl A. Houdek
Sherryl Houdek

Robert Stupnisky

Kari Chiasson
Kari Chiasson

Gerri Dunnigan
Gerri Dunnigan

This dissertation is being submitted by the appointed advisory committee as having met all of the requirements of the School of Graduate Studies at the University of North Dakota and is hereby approved.

Grant McGimpsey
Dean of the School of Graduate Studies

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ABSTRACT

According to the National Center for Education Statistics (2015) only 34% of eighth grade students in the U.S. scored at or above proficient in reading and only 33% were at or above proficient in math. Reading comprehension is essential for the acquisition of knowledge in all coursework and those students who have reading deficits may experience increased academic failure. Deficits in math skills may also increase core academic failure for secondary students expected to complete rigorous courses in algebra and beyond. In a review of the literature, Blount (2012) deduced that academic failure is one of the main predictive risk factors in secondary students for dropping out of school, which can have long term social, emotional, and financial ramifications. The importance of reading and math achievement is not under debate; however, the research in the literature regarding systematic academic intervention for secondary students is sparse (Bemboom & McMaster, 2013).

This quantitative study used Fullan's (2007) change theory as a framework to examine teachers' perceptions of implementing a multi-tiered system of support (MTSS) standard protocol to meet the diverse reading and math intervention needs of middle and high school students. A survey was administered to attain perception data of middle and high school teachers (N = 129) in two Class A school districts in North Dakota. The research questions focused specifically on Fullan's (2007) four factors of implementing change as dependent variables – need, clarity, complexity, and quality/practicality.

Results of the study showed that all teachers surveyed report some form of agreement regarding need (M = 4.06), clarity (M = 3.87), complexity (M = 3.35), and quality/practicality (M = 3.73). A one-way within subjects ANOVA was conducted and there was a significant difference in the perceptions of teachers between the four characteristics of change, $F(3,384) = 64.13$, $p < .05$. The results of the paired samples t-tests show that need was significantly higher than clarity, complexity, and quality/practicality. All four characteristics of change were found to contribute significantly at the coefficient level to the multiple regression model predicting perceived success ($R^2 = .665$, $F(4, 124) = 61.41$, $p < .001$), with need having the strongest correlation with success ($r(128) = .72$, $p < .001$). The results of one-way MANOVA tests did not show significant differences regarding the four characteristics of change between special education teachers and general education teachers (F (4, 123) = 1.24, p = .297; Wilks' Λ = .961, partial η^2 = .04) or between middle school teachers and high school teachers (F (4, 123) = .680, p = .607; Wilks' Λ = .978, partial η^2 = .02).

Results demonstrate the applicability of Fullan's change theory in examining implementation of a multi-tiered system of support standard protocol within secondary schools. Since a high predictor of perceived success of MTSS implementation is need, an implication of the study is to guide school leadership to establish the need for students as well as show how MTSS can meet the needs of the staff prior to implementation.

Keywords: multi-tiered system of support, MTSS, academic intervention, secondary, middle school, high school, general education, special education

CHAPTER I

INTRODUCTION

Stories of successful educational reform are not in abundance across news outlets. Rather headlines such as “Four decades of failed school reform” from the Washington Post fill news mediums describing historical fads and quick fixes that have resulted in failed school initiatives (Welsh, 2013). Research shows shortfalls in taking reform to completion is in part due to the lack of time given for initiatives to become part of the culture (Baete & Hochbein, 2014). This suggests that there is a lack of attention to the components necessary for successful implementation and buy-in from teachers. Regardless of past failure, educational reform continues to emerge because it is necessary for public education to respond to the diverse academic and behavioral needs of students. Fullan (2007) notes that society has begun to see the “large-scale consequences of failed reform” (p. 7), resulting in a growing intensity of large-scale school reform starting in the 1990’s. The knowledge that public schools have not mastered the art of reform does not put the need for change on hold.

On the contrary, change in education is needed as the world changes, the economy changes, and student need changes (Marx, 2014). The need for change does not go unnoticed by educators and can be observed by educational leaders today as some push for innovative ways of learning, to rid schools of broad information acquisition and replace it with in depth, student-led problem solving. In the same breath educational

leaders are also innovating ways to make sure students have the skills needed to be successful contributors to society. Even though change in education is inevitable it does not mean that it is a natural or easy part of the educational process (Barseghian, 2012).

Educational initiatives such as standards based reform and professional learning communities that have the potential to aid in successful district reform may end in failure due to lack of attention to components needed to actually change current instructional practices into one of the aforementioned initiatives (Fullan, 2006). These change components go beyond the necessary pieces of the initiative to the beliefs and behaviors of the educators tasked to follow through on the initiative components. Often the implementation of school-based reform and new initiatives come at an expense to teachers in terms of new roles and responsibilities, time spent training for their new responsibilities, as well as time spent implementing the components of the reform. The responsibility to carry out an initiative falls on teachers regardless if they have a positive perception of the initiative or not.

It is important to understand the factors that lend themselves to successful implementation regarding teacher's perceptions as they are typically the change agents in school reform and initiatives (Baglibel, Samancioglu, Ozmantar, & Hall, 2014; Fullan, 2007). It only makes sense that understanding the components of how to successfully implement change needs to be partnered with the necessary components of school reform initiatives in order to experience success. Fullan (2007) calls combining top-down and bottom-up forces of change "capacity building with a focus on results" (p. 11). This represents a dual focus on how the teachers' experience change in addition to considering

the necessary components for successful implementation. The intention is to garner ownership while at the same time focusing on the effective initiative components.

Multi-Tiered Systems of Support (MTSS) evolved from Response to Intervention (RtI) when it was written into the 2004 reauthorization of the Individuals with Disabilities Education Act (IDEA, 2004). One key difference between RtI and MTSS is that IDEA (2004) defines the tiers in terms of intensity (time and focus) rather than a specific place, person, or instructional strategy (Batsche, 2014). Since MTSS was written into the reauthorization of IDEA (2004) it suggests that MTSS has generated support at the national level as an educational framework. MTSS is defined as:

> an evidence-based model of education that employs data-based problem-solving techniques to integrate academic and behavioral instruction and intervention. This integrated instruction and intervention system is provided to students in varying levels of intensities – or tiers – based on student needs. This needs-driven decision-making model seeks to ensure that district resources reach the appropriate students (and schools) at suitable levels of quality and concentration to accelerate the performance of ALL students. (Gamm et al., 2012, p. 4)

RtI and Positive Behavior Intervention Supports (PBIS) that are represented in the literature are components of the broader systematic process of MTSS in education. The remainder of Chapter I will include the background on MTSS in schools, the purpose of studying MTSS implementation, research questions to be considered, hypothesis of outcomes regarding the research questions, and the significance of the study.

Background of MTSS

With 34% of eighth graders scoring at or above proficient in reading and 33% scoring at or above proficient in math (National Center for Education Statistics, 2015), high schools in the United States can expect to enroll students in need of academic intervention. According to the National Center for Education Statistics (2015), proficiency in reading is a score of 281 or higher and proficiency in math is a score of 299 or higher, both on a scale from 0 to 500. There has been a reduction of the emphasis on student performance targets through meeting standardized test cut points as a result of the Every Student Succeeds Act (2016). However, secondary students with academic deficits will continue to experience complicated educational needs due to the accumulation of negative outcomes (Bemboom & McMaster, 2013). The importance of basic academic skills, such as reading, are essential for secondary students as they are no longer the focus of learning but the tools needed to learn. Still, with a limited number of secondary students showing proficiency, Friedman (2010) notes that other than acknowledging the struggle, attempts to recover the student academically are inadequate.

RtI for academics and PBIS eventually evolved into MTSS as the two started to merge as early as 2007 (Sandomierski, Kincaid, & Algozzine, 2007). RtI in reading was initiated in the United States, but a report from the National Reading Panel (U.S.) and the National Institute of Child Health and Human Development (2000) shows implementation across countries. The Report of the National Reading Panel: Teaching Children to Read featured 38 studies on leveled phonics instruction in which 66% were conducted in the United States, 24% were conducted in Canada, and 10% were conducted

across the United Kingdom, Australia and New Zealand (Wilcox, Murakami-Ramalho, & Urick, 2013). The theory behind MTSS for struggling learners is researched internationally and tiered intervention as a general education initiative is included in IDEA (2004) to reduce special education referrals. IDEA (2004) demonstrated that academic intervention could no longer be the sole responsibility of special education teachers, but that it had to be shared by general education teachers as well. From this, it is clear that MTSS is viewed as an effective system by both researchers and policy makers. However, the reported successes are not equally distributed across grade levels. Specifically, as grade levels increase, MTSS implementation examples decrease.

The research regarding MTSS in academic areas is mostly addressed at the primary level (Bemboom & McMaster, 2013; Fagella-Luby & Wardwell, 2011; Fuchs, Fuchs, & Compton, 2010; King, Lemons, & Hill 2012). Even though instruction does not typically include skill building at the basic level, it is clear that secondary students have a need in light of the national proficiency data. This does not mean that MTSS cannot have success at the secondary level. In a review of research at the primary and secondary levels, Martinez and Young (2011) note that school campuses that show the most success with the intervention process use research-based interventions and include multiple tiers of instruction. However, since a majority of the research is based in primary grades, specifically early literacy, it cannot be assumed what is successful at the primary level will translate into success at the secondary level (Faggella-Luby & Wardwell, 2011).

Tiered instruction and intervention in academic content is a common factor of MTSS across elementary and secondary levels (Brendle, 2016; Ciullo et al, 2016;

Dobbins, Gagnon, & Ulrich, 2014; Stahl, 2016; Wixon, Lipson & Johnson, 2010). Although there are many iterations of MTSS, the framework is based on three levels of increasingly intense instruction and interventions and the manner in which data informs the three tiers (Gamm et al., 2012). The primary level focuses on core or universal instructions and supports, the secondary level focuses on targeted, supplemental interventions and supports, and the tertiary level focuses on intensive interventions and supports (Gamm et al., 2012). The framework provides a guideline of the intensity of instruction or intervention in the area of need based on student data. The type of research-based interventions used are not prescribed and should be chosen to best fit student's needs.

Weisenburgh, Malmquist, Robbins, and Lipshin (2015) conducted a case study of Precision Teaching as a component of a MTSS in a classroom over the course of an academic year. Results showed rapid progress of the 10 participants on the *Iowa Test of Basic Skills* (ITBS) with the Math Total score increasing from a pre-test mean Standard Score of 184.0 to a post-test mean Standard Score of 224.8. The students also made gains in all three subtests (i.e., Concepts and Estimation, Problem Solving, and Computation) with the largest gain occurring in Computation where students went from an average Grade Equivalent of 3.5 to an average Grade Equivalent of 7.9 in one academic year. MTSS does not state that precision teaching be the researched based strategy used, only that students who need increased intensity and time in a subject area receive it on a continuum as demonstrated by this case study.

Early intervention that is a result of MTSS carries an obvious benefit in the primary grades as students are still acquiring basic academic skills. However, there are still students entering into the secondary grades (6-12) below grade level in math and/or reading. Researchers have begun to focus their attention toward the need and implementation of MTSS at the secondary level, with more studies occurring at the middle level (grades 6-8) (Dufrene et al., 2010; Fuchs, Fuchs, & Compton, 2010; King, Lemons, & Hill, 2012; Solis, Miciak, Vaughn, & Fletcher, 2014). Within the past ten years research demonstrates the benefits of increased intensity regarding instruction and intervention for older students offered through an MTSS framework (Duffy, 2007). Clearly, MTSS at the secondary level will be fundamentally different from that at the primary level, but the basic framework that has shown success for younger students will remain.

A study conducted by Windram, Scierka, and Silberglitt (2007) on 18 high school students in a pilot RtI project showed a 66% proficiency rate on a group-administered assessment and a growth rate that was five times greater than that in their previous year. The authors noted that tiered interventions can be successful in middle and high schools with additional changes that are not needed at the elementary level. Some of these factors include adjustments to evidenced-based interventions and adjustments to the building schedule. Educators in secondary buildings need to consider the barriers that do not exist at elementary and overcome them prior to implementing an MTSS framework. This does not automatically imply that the same success will occur for secondary students provided intervention via MTSS as it has for primary students.

As MTSS is emerging into secondary schools the change it takes to implement a new educational framework within a building or district must be considered. There is a considerable amount of information on the benefits of MTSS on academic and behavioral outcomes for students but there is a lack of research at the secondary level regarding implementation (Sansoti, Noltemeyer, & Gross, 2010). Viewing MTSS as a change in the educational framework at school or within a district allows for the use of Fullan's (2007) theoretical framework on the change process to be used as a lens to understand the implementation of MTSS. Teachers have limited time and opportunity to generate change and therefore must be motivated, and their capacity to implement the change must be developed.

Fullan's (2007) change model focuses on three phases: initiation, implementation, and institutionalization. *Initiation* includes all of the actions that lead up to a decision to adopt or move forward with a change (Fullan, 2007). *Implementation* involves the beginning attempts to put the reform or new idea into practice while *institutionalization* is the change becoming an ongoing part of the system (Fullan, 2007). Successful implementation is very influential on whether or not a change will become institutionalized. If institutionalization does not occur, the change is just another attempt at reform that disappears through attrition. Specifically, Fullan (2007) describes four characteristics of change that lend to successful implementation, which include: need, clarity, complexity, and quality/practicality. Teacher's beliefs regarding these characteristic of change are important as they will causally influence the implementation of MTSS within secondary buildings and/or districts.

Study Purpose

The purpose of the study was to examine teachers' perceptions of implementing a multi-tiered system of support (MTSS) to meet the diverse academic needs of middle and high school students within Fullan's (2007) implementation phase of the change process.

Research Questions

1. What are the perceptions of teachers' regarding the characteristics of change (need, clarity, complexity, and quality/practicality) relative to the implementation of MTSS?
2. What characteristics of change (need, clarity, complexity, and quality/practicality) predict teachers reported level of implementation success of MTSS?
3. Are there significant differences between general education and special education teacher's perceptions regarding characteristics of change with implementation of MTSS (need, clarity, complexity, and quality/practicality)?
4. Are there significant differences between middle school and high school teacher's perceptions regarding characteristics of change with implementation of MTSS (need, clarity, complexity, and quality/practicality)?

Hypotheses

1. If faculty within a school building are properly implementing MTSS successfully, then the perception of the characteristics of change by teachers will be high (Fullan, 2007).
2. Since complexity and quality/practicality directly impact the individuals responsible for implementing change, they will equally predict the reported level of success (Fullan, 2007).

3. Due to their original role as the only interventionists in public schools, special education teachers will more likely recognize the characteristics of change (need, clarity, complexity, and quality/practicality) than general education teachers (Swanson, Solis, Ciullo, & McKenna, 2012).
4. Due to intervention starting in primary grades and progressing upward, middle school teachers will more likely recognize the characteristics of change (need, clarity, complexity, and quality/practicality) than high school teachers (Regan, Berkeley, Hughes, & Brady, 2015).

Significance of the Study

Proficiency in math and reading of secondary students in the United States demonstrates the need for change in the way that students are instructed who are below grade level. Both the research community and policy makers have recognized the benefits of the use of MTSS in education. However, the field application and research results mostly reflect the primary grade levels, which may not translate to exact replication at the secondary level. There is also a lack of research on the change process as well as aspects of success that secondary schools are experiencing that have implemented MTSS. This study may provide researchers a tool to determine change readiness by way of Fullan's (2007) educational change model, along with the components that are necessary for implementation. The research study may also provide practitioners with information on what aspects and what targeted population to focus on when looking to implement MTSS in middle schools and high schools.

Definitions

- Multi-Tiered System of Support (MTSS).

  An evidence-based model of education that employs data-based problem-solving techniques to integrate academic and behavioral instruction and intervention. This integrated instruction and intervention system is provided to students in varying levels of intensities – or tiers – based on student needs. This needs-driven decision-making model seeks to ensure that district resources reach the appropriate students (and schools) at suitable levels of quality and concentration to accelerate the performance of ALL students. (Gamm et al., 2012, p. 4)

- Positive Behavior Interventions and Supports (PBIS). A three tiered model to meet the behavioral and social needs of students while also focusing on prevention and data-based decision making (Öğülmüş & Vuran, 2016).
- Response to Intervention (RtI). A tiered approach to provide research-based intervention that includes assessment and progress monitoring of students not at grade-level academic skills receiving the interventions and may eventually result in a referral to special education (Batsche et al., 2006).

Summary

The purpose of this study was to examine teacher's perceptions of MTSS as an educational change at the secondary level within Fullan's implementation phase of educational change. Examining the implementation of an educational initiative such as MTSS within the conceptual framework of change is necessary to further the field of education in regards to successful implementation of new initiatives. Reform in education

over the last 50 years has increasingly expanded outside of local control resulting in "implementation processes [that] are also becoming increasingly shared across public and private sectors" (Galey, 2015, p. 13). The research must go beyond the need to initiate educational reform, the success of educational initiatives, and organizational change. The field of education needs to understand how all of these components affect the successful implementation of change in education by understanding how the change will impact those who implement it, the teachers.

The questions posed in this study measured teacher perceptions regarding characteristics of change within the implementation phase of Fullan's (2007) educational change theory (need, clarity, complexity, and quality/practicality). The researcher also compared specific subgroups including special education and general education teachers in addition to middle school teachers and high school teachers.

Chapter II provides an examination of the literature on educational reform, organizational change, and MTSS in education. The methods of the current study, including research questions, participants, the measurement used, and the research procedure, as well as the analysis procedure are presented in Chapter III. The results of the data analysis are presented in Chapter IV in narrative and tabular form. A summary of the study, conclusions regarding the study, limitations and recommendations are presented in Chapter V.

CHAPTER II

LITERTURE REVIEW

Introduction

The following review of the literature will have a dual focus on the process of change and implementation of a multi-tiered system of support (MTSS) at middle and high school, collectively referred to as the secondary level. This approach will help set up the purpose of this study, which is to examine teachers' perceptions of implementing MTSS to meet the diverse academic needs of middle and high school students within Fullan's (2007) implementation phase of the change process. The process of change will address how broader research such as organizational change and resistance to change translate specifically to change within a school under reform. Fullan's (2007) theory on educational change will be synthesized and the implementation process will be applied to MTSS. MTSS will be examined from the elementary origins to the recent research and application at the secondary level. The need, clarity, complexity, and quality/practicality factors of Fullan's implementation is used to synthesize the importance of further MTSS research and application at the secondary level.

History of Educational Reform

Organizational Change

Organizations survive and thrive if they have the ability to adapt to the changing world that surrounds them. However, a range of organizational change failure rates have

been reported from 40% to 70% (By, 2005; Insern & Pung, 2007). With the constant need for change existing across a multitude of organizations, research continues to emerge in many fields addressing different components of the change process (Bess, 2015; Deschamps, Rinfret, Lagace, & Prive, 2016; Legg, Snelgrove, & Wood, 2016). A common theme from the research includes the human factor as organizations embark on the change process. This may be in the form of people in leadership roles, employees, or consumers of the organization. Whatever the human component, they can bring both barriers and strengths to organizational change.

A specific research topic surrounding organizational change is focused on perceptions, attitudes, or opinions of employees who are impacted by the change and/or responsible to carry out the change (Foster, 2010; McKay, Kuntz, & Naswall, 2013; Oreg & Sverdlik, 2011). The human capacity to support or not to support a change is often more powerful in the outcome than the actual change itself. For example, Foster (2010) conducted research across three different industries all undergoing unique changes to increase performance. The study did not focus on whether or not the performance enhancement changes were beneficial, but rather employee resistance and readiness for change based on perception. The results showed ($\beta = 0.61$, $p < 0.001$) that employee perception on measured components such as organizational justice were related to commitment to change (Foster, 2010). The perception of social justice had the "strongest path coefficient represented in the hypothesized model" (Foster, 2010, p. 28). The results suggest that commitment to change was related to perceived equal distribution of responsibility and impact on individuals within the organization.

Organizational change also occurs in PK-12 education, which is an organization that is made up of human resources that is in the "business" of serving people, so perceptions matter. The perception of teachers regarding change may be one of the most important factors in successful organizational change attempts (Fullan, 2007). Often reforms that are put into place in schools are based in research and have shown success in student performance, but as organizational change research has shown, the change is not the only factor that influences success. Konakli (2014) conducted a study solely on a schools' openness to change based on teacher perception. The study was not focused on a specific reform, but rather at its core, openness of the faculty in a school building to any change based on the Faculty Change Orientation Scale (FCOS). The FCOS developed by Smith & Hoy (as cited in Konakli, 2014) was developed to measure the faculty's perceptions of change in schools. From the results, the overall perception of teachers was that the schools were partly open to change, with decreasing openness to change as the data was split into subcategories including gender, school type, years of service, and branch (Konakli, 2014). Teacher perceptions can be a barrier or strength to successful change even before a change is proposed, making perception an important factor to consider.

Resistance to Change

When perceptions become a barrier to change, the people within the organization with these perceptions are thought of as resisting change. Oreg, Vakola, and Armenakis (2011) conducted a meta-analysis on 79 quantitative research articles from the past 60 years that focus specifically on the reaction of individuals. As a result of the meta-

analysis the researchers developed a model of change recipient reactions that includes antecedents, explicit reactions, and change consequences (Oreg, Vakola, & Armenakis, 2011). The researchers note that antecedents can compromise pre-change antecedents; that reactions are tridimensional and can be negative or positive; and that change consequences, personal or work related, can create resistance. The model that is a result of years of research on individual perception of change, suggests that attending to individuals and understanding if they have negative or positive perceptions of change can aid in reducing failure of implementation.

Resistance to change has been researched in many fields, education being one of them. With the amount of reforms that come through public schools, it is imperative to have an understanding of the potential barriers to change. Stewart, Raskin, and Zielaski (2012) conducted a mixed methods study to understand the barriers to reform within schools in Minnesota. Perceptions of superintendents surveyed showed that 80.1% thought their districts had ingrained patterns or behavior resistant to school reform and 78.2% thought that their district had passive resistance to change (Stewart, Raskin, & Zielaski, 2012). Understanding the specifics of the resistance to change regarding teachers could eliminate barriers to change that are outside of the reform itself. This, in turn, could help district leadership improve upon reform rollout. Understanding negative characteristics in districts can also eliminate the argument that the resistance to change is outside of the control of district leadership (Stewart, Raskim & Zielaski, 2012).

Research on resistance to change can be used by practitioners to promote change readiness in districts and individual buildings. Chung, Su, & Su (2012) found that change

readiness occurs when behavioral resistance induced by affective and cognitive resistance is reduced. Although their study was not conducted in PK-12 schools, the implications can be implied for the current situation in PK-12 schools. The culture within any organization would benefit from a shift to accepting change and understanding that change will be a constant factor within the organization at a cognitive level, which relates to the change reaction component of Oreg, Vakola, & Armenakis' (2011) model. Eventually, understanding the negatives could lead to teacher empowerment by promoting the positive components of change.

When teachers are cited as a central component for improvement and in the same breath are identified as resistant to improvement efforts it is important to empower them to aid in reform success (Thornburg & Mungai, 2011). Thornburg and Mungai (2011) conducted an investigation of how teachers experience reform efforts to empower teacher voices in reform efforts. Eight factors were identified through phenomenological research methods that can impede or enhance reform efforts, directly from teachers who are typically the drivers of reform. The factors include: "time with reform; leader consistency; accountability versus needs; teach diverse students; no student choice; peer communication; reforms tried before; and reforms from outside forces" (Thornburg & Mungai, 2011, p. 211). Pairing reform with research on resistance to change and change readiness can provide leaders of reform efforts strategies to ensure successful implementation and reduce failure due to a lack of attention to the components of organizational change.

School Reform

Often, change within public education is referred to as educational reform, which in the past three decades has had an increased focus on student performance. Since the introduction of No Child Left Behind, public school organizations have been experiencing rapid changes in response to the demands that all students achieve high standards. PK-12 education in the United States has consistently experienced change since the first Latin Grammar school opened in Massachusetts in 1636 (Henson, 2010). However, the changes that have been occurring since the introduction of No Child Left Behind have spawned from assessment data and schools making adequate yearly progress (AYP), which is a shift in the thinking of United States educators. Rigor being introduced through the common core state standards (CCSS) is an additional pressure facing PK-12 educators today that may create strain and feelings of pressure to quickly adapt. In addition to the pressure to increase student assessment scores and amp up curriculum, educators also are asked to adapt to factors that affect all organizations from the private sector to the public sector such as advances in technology, market shifts, the economic environment, and skillset demands (Taylor, 2013).

The current changes in the way that education is mandated and deemed successful has created a demand for innovative ways of thinking about change in the public education system. Organizations are faced with a steep learning curve about data-based decision making and educators within organizations are expected to develop new ways of thinking about changes that occur. Often these changes and mandates are top-down initiatives and generate negative connotations by members of PK-12 organizations. The

delivery of information from superintendents, district coordinators, leadership teams, or principals must be considered when dealing with PK-12 organizations. Research has shown the importance of communication as a factor of promoting change readiness within an organization (Foster, 2010; McKay, Kunts, & Naswall, 2013; Jummieson & White, 2011). Another important area found in the research regarding change readiness relates to the culture in the school building (Jummieson & White, 2011; Thompson, 2010). Similar to how leadership in education strives to create a culture for learning through effective communication, they need to create a culture for change among educators due to the constant state of change that occurs in PK-12 educational organizations.

Although the pressures in education may be new, top-down reform and even large scale reform is not new to education. Fullan (2009) examines large-scale reform, or "deliberate policy and strategy attempts to change the *system* as a whole" (p. 102) specific to education. In his historical review of educational reform, Fullan (2009) notes that prior to 2002, the pressure for reform existed but there was not a focus on whole-system reform, so the reality of reform was lacking. This is a result of politically driven reform that may not necessarily consider policies and strategies that lend to sustainable educational reform. Educational reform in the past also has held a specific focus ignoring the structure of education as a whole. Strategically using change knowledge to professionalize reform will result in a truly systemic change effort in education (Fullan, 2009). To avoid repetition of the reform process of the past, reform at a systemic level

should consider the overall process of change in addition to the educational initiative trying to be met to truly experience success.

Recent research is not only focusing on the positive components of reform but also the time, process, and professional development needed to root reform into the culture of the school (Sappington, Pacha, Baker, & Gardner, 2012). For example, Baete & Hochbein (2014) examined math proficiency data of schools participating in Project Proficiency, specified for urban schools. Although the schools looked to raise proficiency in math and reading, the focus was not on a single program or funding initiative but rather on efforts to fundamentally change the teaching practices within these schools. The results showed that Project Proficiency positively changed classroom instructional practices as a result of increased proficiency of students in mathematics achievement by eight points when controlling for socioeconomic status and prior achievement (Baete & Hochbein, 2014). Systemically altering teaching practices so they became steeped in the culture had a positive impact on student achievement.

Change Implementation Model

Change Implementation

There are many change models to reflect organizational change. Cameron and Green (2015) list nine models of change developed by key authors in the field of organizational change including: “Lewin, three step model; Bullock and Batten, planned change; Kotter, eight steps; Beckhard and Harris, change formula; Nadler and Tushman, congruence model; William Bridges, managing the transition; Carnall, change management model; Senge, systemic model; and Stacey and Shaw, complex responsive

process" (p. 109). The change models can take different approaches as to what are the important components of change implementation including, but not limited to, the organization as a whole, individuals within an organization, cognition, justice, and relationships (Cameron & Green, 2015; Foster, 2010). Lewin's three step model is one of the most well-known and widely cited models and is often the foundation on which subsequent change models were based (Cameron & Green, 2015; Foster, 2010).

"Many change models have roots in Lewin's three-phase conceptualization of change" (Foster, 2010, p. 6). Lewin's (1951) change process includes unfreezing, moving, and freezing. In the first stage, unfreezing, the goal is for an organization to accept the change by limiting resistance to change and changing the core beliefs of the organization (Lewin, 1951). In the second stage, moving, the organization is beginning to accept the change and redesign roles, responsibilities, and relationships while at the same time promoting supports (Lewin, 1951). The last stage, refreezing, occurs once the organization has embraced the change and this is denoted by the change becoming an integrated and internalized part of the organization (Lewin, 1951). The influences of Lewin's (1951) change model are present in change theories specific to education. For example, Fullan's (2007) work on educational change incorporates three phases that occur over time. The phases include initiation, implementation, and institutionalization in which commonalities can be found between unfreezing, moving, and refreezing. Beyond the specificity to education, Fullan (2007) separates from Lewin in the interconnectedness between the phases and a lack of a linear sequence put forth by Lewin (1951).

Fullan's Change Theory

Michael Fullan has approached change from an educational perspective starting in the 1980's and continuing to the present and has noted that "change is a process not an event" (Fullan, 2007, p. 68). Since his early publications, Fullan has focused on "integrating the theory and practice of educational change" (Fullan, 1982, p. 3). In his early work Fullan discussed what change is compared to the process being followed to implement the change (Fullan, 1982; Fullan, 1983). His understanding of the human component and complexity of educational change is prevalent across the span of his work. Fullan not only addresses educational change on the broad spectrum but becomes more specific in his writings about leading educational change and the importance of strong building and district leadership (Fullan, 2001).

Influenced by the extensive literature on change theory, Fullan (2006) operates under seven core premises that underpin his use of change knowledge which are: "a focus on motivation; capacity building, with a focus on results; learning in context; changing context; a bias for reflective action; tri-level engagement; persistence and flexibility staying the course" (p. 8). The first premise, a focus on motivation, cannot be achieved in a short amount of time. However, without gaining momentum in motivation, the strategy being used for change will fail (Fullan, 2006). The other six premises presented by Fullan (2006) are all related to motivation and their purpose is to aid in the accomplishment of the first premise. In this context, change is impossible without motivation because the personnel involved will not put forth an effort. The intention of operating under these

core premises is to push a theory in use to a theory in action, which results in the connection between strategy and the desired outcome (Fullan, 2006).

Focusing more on his works addressing the broad scope of educational change, Fullan has thoroughly researched and published on the topic of implementing change (Fullan, 1982; Fullan, 1983; Fullan 1993; Fullan 2006). Fullan's work expresses the importance of knowing and understanding the change process in education in order to design effective strategies for improvement (Fullan, 1983). The desired outcome is that school staff will be better equipped to replace old programs with better ones in turn helping them meet goals. Although his writings point out many components that can impact change, one of Fullan's early models for change included "initiation, implementation and institutionalization" (Fullan, 1983, p. 33). According to Fullan (1983) initiation includes mobilization, adoption, decisions, and development; implementation represents putting the change into practice; and institutionalization includes building in the innovation.

In his latest book on educational change, Fullan (2007) continues to frame change under the "simplified overview" (p. 66) of initiation, implementation, and institutionalization with the outcomes including student learning and organizational capacity. In addition to initiation, implementation, and institutionalization, Fullan (2007) continues to addresses the human side of educational change. Fullan (2007) notes that how "subjective realities are addressed or ignored is crucial for whether potential changes become meaningful at the level of individual use and effectiveness" (p. 37). Starting with his initial works on change, Fullan continuously emphasizes the importance of the human

component within his change process and the great impact that different stakeholders have on the change process within education.

Since the 1980's Fullan has recognized that change in education is necessary and continuous in order to design effective strategies for improvement. In his paper *Change Process and Strategies at the Local Level,* Fullan (1983) notes that research is convergent but "…deliberately attempting change is a complex, dilemma-ridden technical, sociopolitical process" (p. 3). It is this complex understanding of change that makes his seemingly simplistic change process, initiation, implementation and institutionalization, so rich and complex. This is noted in his understanding of the time educational change can take, which is from two to four years from initiation to institutionalization and up to five to ten years for large-scale change (Fullan, 2007). Fullan clearly understands the complexities and factors that impact change and his change process reflects a way to navigate through the labyrinth of change to attain the outcomes of student learning and organizational capacity.

Fullan's work regarding initiation has evolved somewhat since the 1980's but the overall idea is the same as it was at conception. Similar to Lewin's (1951) unfreeze stage, Fullan (2007) recognizes that initiation, as the process leading up to implementation, can happen in many different ways. The consideration of variables within each of the components of the change process are where the depth and complexity of change are revealed. Eight factors that influence initiation have been identified in Fullan's latest work on education change. These factors include: "existence and quality of innovations; access to innovation; advocacy from central administration; teacher advocacy; external

change agents; community pressure/support/apathy; new policy-funds (federal/state/local); and problem-solving and bureaucratic orientations" (Fullan, 2007, p. 70). All of the aforementioned factors influence decisions made during the initiation process that eventually impact the implementation of educational change. If done successfully, initiation can result in meaning and commitment rather than confusion and alienation regarding the change effort (Fullan, 2007).

Fullan (2007) describes educational change as "technically simple and socially complex" (p. 84). This seems to be extremely relevant regarding the implementation process of change. Although the processes within Fullan's change model are not linear, implementation depends heavily upon initiation. If the initiation culminates in clarity and commitment, the implementation process will begin on a more positive note. This does not mean that implementation will be successful, nor does a less than ideal initiation condemn implementation to failure. The cyclical nature of Fullan's change process allows the ebb and flow between the three processes in order to support one another to eventually end in successful educational change. The definition of implementation, according to Fullan (2007), is "…the process of putting into practice an idea, program, or set of activities and structures new to the people attempting or expected to change" (p. 84). Despite this concise definition, implementation is a complex process with many factors.

In 1982 Fullan presented his theory on the successful implementation of educational change. Within that presentation a large portion focused on the implementation process and the characteristics that contribute to implementation, which

share some similarities with Lewin's (1951) moving stage of change. These characteristics, need, clarity, complexity, and quality/practicality, also appear in his 2007 book *The New Meaning of Educational Change* as one of three overarching factors impacting implementation (Fullan, 1982; Fullan, 2007). Fullan's (2007) implementation process consists of characteristics of change, local characteristics, and external factors. The characteristics of change have already been stated, and have remained the same since they were first presented. Local characteristics include district, community, principal, and teacher. External factors are defined as government and other agencies totaling nine factors that influence implementation. It is important that these characteristics are resolved so implementation can be successful. These four factors also provide a guide to the components that are necessary in order to engage in a system-wide change.

After muddling through the change process for what can take up to ten years, the goal is for the change to become institutionalized. Following successful planning and implementation, in order for a change to be ongoing the components must be built into the entirety of the school system (Fullan, 2007). Although a majority of the success of institutionalization hinges on the ability to initiate and implement a change, it is not unheard of for successful changes to be discarded. Including evaluation within the process of the change limits the possibility that a common dilemma, such as teacher turnover, can derail the continuation of a change (Fullan & Mundial, 1989; Fullan 2007). Unlike Lewin's (1951) refreeze stage, institutionalization is not the last step in a linear process but must be considered throughout all three phases of the change process with the

idea that the change is within the culture of the school and not just the single initiative or innovation (Fullan, 2007).

Through the phases of the change process—initiation, implementation, and institutionalization—mastering the factors that make up each phase has an impact on schools regarding educational change. Fullan's view of initiation, implementation, and institutionalization has remained steady since his research in the 1980's; however, the type of educational change that the process is applied to has evolved with time. Currently change is large scale and accountability of schools from outside factors has increased. Fullan (2009) predicts that educational change that is preferred and successful has "…a new emphasis on capacity building, especially with respect to deep instructional practices" (p. 110). Strategies will need to focus on the results of capacity building using evidence-based practices.

Beyond the aforementioned factors that impact change in a positive manner there are factors that create barriers or limitations to improvement in schools through educational change. These barriers need to be understood and considered during planning and implementing change in order to deter them from becoming larger than the positive factors. Fullan (1983) provides six limitations to bring about improvement through deliberate educational change, which include unsolvable problems, the nature and narrowness of goals, demographics, abstraction, misunderstanding and incompleteness, transfer/sequencing, and subtle combinations. Unsolvable problems can exist in an academic realm where a solution has not been created or successfully implemented, or in the feasibility of resources and implementation (Fullan, 1983). If goals are not linked

together and resources are being allotted to a narrow scope, it is unlikely change will take priority in a school (Fullan, 1983). Demographics and the uniqueness of settings within research can create results in a vacuum, which limits knowledge on the process of change in diverse settings in turn negatively impacting transfer (Fullan, 1983). The last limitation Fullan (1983) poses to understand prior to embarking on change is an overriding one that takes into consideration the simplicity-complexity paradox of change. In *The New Meaning of Educational Change,* Fullan (2007) recognizes that understanding and accepting limitations does not mean that the change is unattainable. His focus on planning and coping with change in addition to planning and implementation is to demonstrate that change, under difficult conditions, is possible in real world conditions (Fullan, 2007).

A Multi-Tiered System of Support

Origins

MTSS originates from research and practice surrounding Response to Intervention (RtI) and Positive Behavior Intervention Supports (PBIS). RtI came to the forefront of educational reform with its inclusion in IDEA (2004). Amendments added to IDEA (2006) solidified the use of researched-based intervention and analysis by a multi-disciplinary team as an alternative to the discrepancy model to identify specific learning disabilities (SLD). Although the primary goal of RtI is to improve academic and behavioral outcomes for all students, it was brought into policy with a secondary goal of identification for special education (Fletcher & Vaughn, 2009). The intention behind RtI is not that it is generated out of or by special education, but that it is a general education initiative. Even so, special education has benefited from the introduction of RtI into to

federal legislation both through identification as well as inclusion (Hauerwas, Brown, & Scott, 2013; Sailor & McCart, 2014).

Much of the early research and practice regarding RtI occurred in reading at the primary level (Bemboom & McMaster, 2013; Fagella-Luby & Wardwell, 2011; Fuchs, Fuchs, & Compton, 2010; King, Lemons, & Hill 2012). Although RtI has expanded to other academic areas, many studies can be found in the area of reading intervention. For example, Scholin and Burns (2012) conducted a meta-analysis specifically on reading fluency intervention outcomes and upon their first electronic search, 4,452 studies were identified. The data was eventually narrowed to 18 studies that examined 31 different reading interventions. This data illustrates that the structure that RtI evolved into for all academic areas has a strong root in reading interventions.

The basic structure of RtI follows a three tiered model for intervention that is best understood as a set of processes and not as a single model (Fletcher & Vaughn, 2009). Traditionally the tiered approach to intervention also includes assessment and progress monitoring of students not at grade-level skills who are receiving the interventions and may eventually result in a referral to special education (Batsche et al., 2006). Another major component of RtI includes the multi-disciplinary problem solving team, which is responsible for identifying goals, developing research-based intervention plans, and monitoring progress on goals for individuals who are struggling (Brendle, 2015). This model of approaching tiered intervention has become known as the problem solving model (Fletcher & Vaughn, 2009).

The problem solving model can also be used to address behavioral needs in what is referred to in research and practice as PBIS. PBIS also uses a three tiered model to meet the behavioral and social needs of students while also focusing on prevention and data-based decision making (Öğülmüş & Vuran, 2016). Both RtI and PBIS models suggest that 80% of students will respond to tier 1 support or core curriculum and 20% of students will need tier 2 and tier 3 supports in addition to tier 1. (Bradshaw, Pas, Debnam, & Johnson, 2015). The support and evidenced based interventions that are provided in tier 2 and tier 3 can be limitless based on student need (Bradshaw et al., 2015). In an analysis of 17 studies where the independent variable was PBIS, PBIS was found to "have a significant effect on improving school climate by attributing to it students' social competence and academic achievement" (Öğülmüş & Vuran, 2016, p. 1708). Like RtI, PBIS has become a commonly researched and commonly practiced framework in public schools (Bradshaw, Pas, Debnam, & Johnson, 2015).

Purpose and Components of a Multi-Tiered System of Support

There are fundamental differences between MTSS, RtI, and PBIS; however, the frameworks share many components and have a similar purpose. MTSS is designed so schools can provide the appropriate level of instruction and intervention to students in both academic and behavioral areas (Gamm et al., 2012). According to Gamm et al. (2012) the MTSS framework is based on a continuum of evidenced-based interventions and instruction with increasing intensity among the three tiers to meet the needs of diverse students (Gamm et al., 2012). For the purposes of this research the MTSS framework will be referred to in terms of a standard protocol, which is a fundamental

difference between the individual problem solving that often defines RtI and PBIS. A standard protocol uses standardized, data-based criterion to determine student level of need to which students are exposed to the appropriate intensity of instruction or intervention in the identified skill area (Dufrene et al., 2010).

The three tiers of intervention in an MTSS framework do not prescribe specific programs or describe a specific group of students, but they provide information on the level of intensity and time needed for a specific skill (Gamm et al., 2012). Tier 1 includes universal screening and support, Tier 2 includes strategic screening and support, and Tier 3 includes intensive and individualized screening and support (Dufrene et al., 2010; Gamm et al., 2012; Morrison, Russel, Dryer, Metcalf, & Rahschulte, 2014). In simpler terms, Tier 1 is the core curriculum, Tier 2 is the core curriculum with additional support, and Tier 3 is a small group or individualized curriculum. In schools that have not implemented MTSS, significant change in the professional practice of teachers, administrators, and support staff is required (Morrison et al., 2014).

Implementation Factors and Teacher Perceptions

Success with the implementation of MTSS relies heavily on the preparation and the compliance of teachers responsible for implementation with fidelity. (Wilcox et al., 2013). Teachers make up a majority of individuals who comprise the staff within any given school building. It is important that teacher's needs and perspectives are taken into account prior to and during the implementation of MTSS (Meyers, Meyers, Proctor, & Huddleston, 2012). One reason it is important to consider the perceptions of teachers regarding implementation of MTSS is that it requires a pedagogical shift in the education

delivery model. Special education and general education resources are allowed to be combined to provide more effective programming for all students regardless of a diagnosis or special education label and also embraces the goal of inclusion (Sanger, Friedli, Brunken, Snow, & Ritzman, 2012; Wilcox et al., 2013).

A mixed-methods study was conducted that examined the perspectives of teachers regarding MTSS in a variety of different grade level, economic, cultural, and geographical settings resulting in three central themes surrounding successful implementation (Wilcox et al., 2013). The researchers identified that no matter the setting, teacher's beliefs and views impact implementation. Specifically, the three themes that were identified through surveys, interviews, and focus groups of teachers included professional development for instruction, assessment for instruction, and collaboration for instruction (Wilcox et al., 2013). The perception of teachers regarding what components are important in MTSS implementation can have an impact of whether or not the school will meet the goal of MTSS, which is to identify and meet the needs of individual students.

In addition to success depending on implementation with fidelity, schools that experience success use multiple tiers of instruction made up of research-based instruction and intervention (Martinez & Young, 2011; Wilcox et al., 2013). The tiered approach must be organized and integrated into the entire system allowing teachers to implement interventions that are easy to use and accurate (Martinez & Young, 2011). The perceptions of teachers are that MTSS is beneficial to students, but the logistics such as data collection and paperwork, can create more work for intervening teachers (Martinez

& Young, 2011). The MTSS framework has been established in primary grades and it becomes evident in a standard protocol model that a data-based decision process to identify student's levels of need in addition to tiered instruction with research-based interventions are cornerstones for successful implementation. However, there are drastically fewer studies at the secondary level guiding practitioners on how to design and successfully implement MTSS for academic needs (Pyle & Vaughn, 2012).

Secondary Level Multi-Tiered System of Support

The recent research of MTSS at the secondary level often has a focus on behavioral and social needs of students (Flannery, Fenning, Kato, & McIntosh, 2014; Flannery, Frank, Kato, Doren, & Fenning, 2013; Swain-Bradway, Pinkney, & Flannery, 2015). Similar to implementation of an MTSS framework in the primary grades, active engagement by all staff at the secondary level is pertinent for the MTSS framework to be successful (Swain-Bradway et al., 2015). Along with engagement by all staff, another similarity between implementation at the primary level and secondary level is the daily support needed for those who are implementing the research-based interventions (Swain-Bradway et al., 2015).

Beyond the standard cornerstones, success of implementing an MTSS framework focused on behavior at the high school relies on attending to the unique characteristics of high schools during the initial, formal professional development (Flannery et al., 2014). Some of the considerations require a shift in the model as it is implemented in the primary grades due to the developmental stage of students, the size of the school, and the schedule (Flannery et al., 2013; Flannery et al., 2014). Often the focus for intervention

for older students is on remediation, supplemental support, and content recovery to support graduation (Pyle & Vaughn, 2012). An important finding from the research of MTSS at the secondary level is that change to an MTSS framework is likely to take longer due to the unique factors that secondary schools have over primary schools (Flannery et al., 2013). Flannery et al. (2013) list these factors in five broad categories including "size, school organization, school culture, student developmental level, and outcomes" (p. 271). An important systemic outcome of these factors is that secondary schools often have more teachers and more departments, which requires a conscientious effort on creating buy-in through establishing systems of communication and consensus (Flannery et al., 2013).

Starting nearly a decade ago, researchers were noting the lack of systemically implemented MTSS frameworks at the secondary level (Duffy, 2007; Flagella-Luby & Wardwell, 2011; Pyle & Vaughn, 2012; Vaughn & Fletcher, 2010). There are, however, secondary schools that are successfully implementing MTSS and the research is showing that it is not too late to intervene and see positive results with secondary students (Fagella-Luby & Wardwell, 2011; Pyle & Vaughn, 2012). Similar to early research at the primary level, the targeted academic skill to be remediated at the secondary level is reading. Pyle & Vaughn (2012) found that secondary students with significant reading deficits who did not receive intervention supports significantly declined in reading achievement, which was not the case for secondary students who did receive intervention. Treatment students also showed statistically significant scores that were higher than the comparison group in word identification (ES = 0.49) and reading comprehension (ES =

1.20) (Pyle & Vaughn, 2012). The significant effect sizes reported compare very low performers in reading receiving three years of reading intervention compared to those who are not receiving reading intervention (Pyle & Vaughn, 2012).

As research emerges on MTSS at the secondary level, differences between MTSS at the primary level and the secondary level have been identified regarding components that result in successful programmatic implementation. Since secondary students are in a phase of remediation when a need is identified, a standard protocol should identify the level of need and students should be placed accordingly, which could include advancing directly to the most intensive intervention (Vaughn & Fletcher, 2010). Also, secondary students in need of intervention often have a wider gap in skills compared to peers requiring longer intervention time and less frequent progress monitoring (Vaughn & Fletcher, 2012). The time and growth restraints that determine an effective intervention at the primary grades cannot be applied to students in secondary grades, they need longer and more intense intervention. MTSS will be fundamentally different at the secondary level because students are developmentally different than primary students and the demands of the curriculum are different at the secondary level (Pyle & Vaughn, 2012).

The Need for a Multi-Tiered System of Support in Secondary Schools

Oftentimes, teachers do not seem to see the need for an advocated change, such as MTSS (Fullan, 1982; Fullan, 2007). Three complications that aid in the difficulty in creating an understanding of actual need versus perceived need include an overload of improvement agendas, accepting the lack of clarity of precise needs from the start, and understanding where need will fit in relative to the other eight factors impacting implementation (Fullan, 2007). In successful educational change, need should become

further clarified to staff as the change implementation progresses (Fullan, 2007). This is similar to the findings from Flannery et al. (2013) regarding the need for continued professional development to create buy-in at the secondary level in order to have successful implementation of an MTSS framework. The need for a way to intervene with at-risk students at the secondary level becomes intensified as their progress toward graduation becomes threatened and students are pushed to drop out (Bradley & Renzulli, 2011).

High School Dropout

In the United States, close to 7,000 students drop out of high school daily. This translates into a total of 1.2 million students yearly in the United States who do not graduate on time with their peers (Alliance for Excellent Education, 2011). One of the risk factors associated with dropout rates is failing grades in core academic content areas (Blount, 2012). Todd, McKee & Caldarella (2016) found that low GPA and D grades as early as middle school can be effective predictors of high school performance. Students who are falling behind on credits are more likely to drop out and these students often have lower academic achievement than grade level peers (Blount, 2012).

According to Stark & Noel (2015), the dropout rate for students with disabilities in 2012 was higher than students without disabilities at 14.4 percent versus 6.3 percent. In a study conducted with a population of students with learning disabilities, or lower achievement than peers, the dropout rate was similar to that of the national levels at 14.1 percent (Doren, Murray, & Gau, 2014). Doren et al. (2014) used a univariate logistic regression model to identify four individual factors that significantly predicted dropout rates in students with learning disabilities. These characteristics include “grades (OR =

0.42), social skills (OR = 0.84), risk behaviors (OR = 1.44), and ever been arrested (OR = 2.98). The odds a student would drop out decreased by 138% for each one-unit increase in grades" (Doren et al., 2014, p. 155). The study looked at many variables that can contribute to dropout, but the odds ratios reported for the four aforementioned characteristics demonstrate that they are significant as predictors (Doren et al., 2014). This study shows intervening with students who have achievement needs can have significant benefits.

The Cost of Dropping Out

If the dropout rates continue as they are without intervention at the secondary level, the consequences will extend beyond the loss of attaining a valuable education. At the individual level, students who drop out of high school begin to see the effects of this decision immediately via income. In 2009 a high school dropout earned $19,540 annually compared to $27,380 earned by a person holding a high school diploma (Alliance for Excellent Education, 2011). This annual income disparity only gets larger as high school dropouts are compared to those with an associate's degree, $36,190, and a those with a bachelor's degree, $46,930 (Alliance for Excellent Education, 2011). It becomes clear through salary alone that those with inadequate education are going to have less financial security and comfort of living across the span of their adult lives than those with high school diplomas and beyond.

Thus far it has been assumed that those who drop out of high school are working citizens in our society who, even though are earning significantly less, are still earning. On the contrary, unemployment is more prevalent for those without a high school diploma than for those with an adequate education (Alliance for Excellent Education,

2011; Brimley, Verstegen, & Garfield, 2016). The National Center for Education Statistics (as cited in Brimley et al., 2016) reported that in 2012 workers in the United States who were 25 and older had an unemployment rate of 24.4 percent compared to those with a high school diploma at a rate of 8.3 percent. This data reveals that it is significantly more difficult to find employment and contribute to the tax revenue in the United States as a high school dropout.

The aforementioned negative individual impacts translate into negative societal impacts. The lack of national tax revenue of unemployed dropouts and decreased tax revenue of low income dropouts is a drain on the nation's economy (Alliance for Excellent Education, 2011). An uneducated populous also requires revenue from tax payers through social welfare programs as well as charity through community and national organizations (Brimley et al., 2016). An uneducated community is not contributing to the overall local, state, and national revenue while at the same time costing local, state, and national entities, resulting in a negative monetary contribution to society. The Alliance for Excellent Education (2011) predicted a dropout rate of nearly 12 million students over the next decade resulting in a loss of $1.5 trillion to the national economy.

The Need for Intervention at the Secondary Level

Ignoring academic deficits in secondary students can negatively impact students for many years in many areas outside of schooling. MTSS offers many benefits for increasing academic outcomes for students with academic risk factors (Friedman, 2010). Identification of risk factors through data-based decision making and intervening prior to

students failing or losing credits may reduce their risk factors of dropping out and prevent loss of credit. An MTSS framework also allows access to all students, general education and special education, to strategic or intensive interventions immediately upon identification of need (Faggella-Luby, Wardwell, 2011). Students in secondary schools do not have the luxury of time when it comes to intervention as they typically are in a situation where significant remediation of skills is needed, hence the need for an MTSS framework in secondary schools that serves all students.

Clarity Surrounding a Multi-Tiered System of Support

"Even when there is agreement that some kind of change is needed…the adopted change may not be at all clear about what teachers should do differently" (Fullan, 2007, p. 89). The change process requires clarity in order for implementation to continue toward the result of a successful change. Clarity about the goals of change and the means of change often become a problem during the implementation of change. For example, teachers can be left with false clarity if the change that is occurring is interpreted in an oversimplified way (Fullan, 2007). The more concrete components of change can overshadow the actual goals of the change, which may be an abstract shift in thinking or delivery of instruction (Fullan, 2007). The goal is to avoid a lack of clarity or false clarity with teachers when implementing a complex change so feelings of anxiety and frustration can be avoided (Fullan, 2007). Fullan (1982) has noted from the beginning of his work with educational change that without clarity, goals can be diffused and means can be left unspecified, which can be detrimental to successful implementation.

National proficiency and dropout data have demonstrated a common need for a change in the framework of how education is delivered to secondary students (Alliance

for Excellent Education, 2011; National Center for Education Statistics, 2015). The connection to the established deficits of secondary students and MTSS as the solution needs to be established before diving into implementation (Fullan, 2007). As research of MTSS at the secondary level has established, there are fundamental differences between MTSS at the primary level and at the secondary level (Fuchs et al., 2010; King et al., 2012). Clear communication and professional development on how the MTSS framework will be implemented and the intended impact can increase teacher clarity on what they are tasked to do and why.

Complexity Surrounding a Multi-Tiered System of Support

Complexity can create issues for implementation due to the fact that it can lend itself to false clarity. However, Fullan (2007) notes that complexity can result in greater change as it provides the opportunity for more to be attempted. The overarching idea behind the benefit of complex changes is that they make a bigger difference than an easier to implement smaller change. Complexity in change can be examined by the "difficulty, skill required, and extent of alterations in beliefs, teaching strategies, and use of materials" (Fullan, 1982, p. 12; Fullan, 2007, p. 90). Complexity in change falls upon those who are expected to implement the change, so it is clear that if the complexity of the change is such that it is going to demand an unattainable effort, the implementation will fail. Fullan (2007) suggests staying with complex change as long as the outcome successfully accomplishes more than simple changes would.

Fuchs et al. (2010) pointed out components of MTSS that will more than likely create problems at the secondary level. This includes the need for a lack of response to

the general education curriculum prior to receiving intervention and the remediation approaches found to be successful in the literature for elementary students. With that being said, educators need to be informed of the fundamental differences of MTSS at a secondary level and the complexities that are unique to secondary need to be in place prior to implementation (Fuchs et al., 2010). For example, secondary schools are often larger than primary schools and contain a more complex student schedule with multiple teachers per day (Flannery et al., 2013). The complexities of the schedule must be adjusted prior to implementation of MTSS providing time for intervention as well as the appropriate training and materials for teachers (Fuchs et al., 2010; Flannery et al., 2013). The day to day barriers that accompany added responsibility do not need to be intensified by the complexity of time and materials if they are not already worked into the system (King et al., 2012).

Quality and Practicality of a Multi-Tiered System of Support

When examining the nature of change implementation, the last factor, according to Fullan (2007), is quality and practicality of the program. Good change is going to take time and hard work, quality is compromised in change implementation when the adoption of the change holds greater importance than the implementation of the change (Fullan, 2007). Quality in change comes with careful consideration on the front end of change and understanding the benefits of proven innovations to the complex change. These proven innovations within the implementation phase must be presented in detail so they are understood as “quality, practical, usable resources” (Fullan, 1982, p. 14).

Teachers will need to see the benefits of the added responsibility and the change in the delivery model. A cornerstone of the MTSS framework is progress monitoring and data-based decision making (Gamm et al., 2012). Although the data is necessary to provide students the appropriate intensity of intervention, the data is also beneficial for those implementing MTSS to see the positive effects. Research at the secondary level is finding success from tiered intervention even when it is implemented with secondary students with severe deficits (Solis et al., 2014; Utley & Obiakor, 2015).

Teachers as Change Agents

Educational reform, such as MTSS, "depends on what teachers do and think" (Fullan, 2007, p. 129). In order to avoid failing initiatives due to lack of teacher participation or buy-in, teachers must become an intricate part of the change process (Fullan, 2007). A mixed-method study of teacher change agents resulted in emerging themes surrounding a teacher as an effective change agent (Lukacs, 2015). Specifically, gaining the support of stakeholders, having a lifelong commitment to community service, and believing teaching is a moral profession were characteristics of teachers who were effective change agents (Lukacs, 2015). Even if a school or district is stacked with teachers who possess qualities of good change agents, motivation is still needed to help propel them to continue with a reform (Lukacs, 2015; Song, 2012). This can come in many forms including recognition, monetary contributions, and empowerment.

Song (2012) conducted a correlation study between professional learning communities (PLC), teacher empowerment, and receptivity to curriculum reform among other factors. The results showed a medium positive correlation between teacher

empowerment and receptivity to reform (Song, 2012). A path model was created that links PLC to teacher empowerment citing that teacher empowerment is a significant predictor of value or reform (Song, 2012). As an alternative to top-down change implementation, teacher empowerment should be considered when looking to implement changes such as MTSS in school.

Teacher empowerment is related to a major component of MTSS implementation, which is professional development. Professional development often focuses on the main components of MTSS, which includes but are not limited to, data-based decision making, research-based interventions, three-tiered delivery model, and progress monitoring (Gamm et al., 2012). These components are necessary for teachers to be educated in, but considering teachers' role in change, professional development must take into consideration teacher views on what is needed. Empowering teacher views on reform rather than dismissing concerns will have positive outcomes on teacher's commitment to the reform and willingness to participate (Thornburg & Mungai, 2011).

Summary

Chapter II focused on both the process of change in organizations and the implementation of MTSS in secondary schools. The human factor is a common theme when analyzing organizational change. Foster (2010) noted that perception of change is closely related to the commitment and follow through of a change. In fact, perceptions were the focus of a meta-analysis on resistance to change conducted by Oreg et al. (2011) further supporting the research that perceptions of change are an important factor to consider. Reform in schools is a catalyst for many changes, and in the case of school

change, teachers' perceptions matter. Research on school reform has started to narrow the focus of reform on rooting the reform into the culture, starting with the people in the school (Sappington et al., 2012).

Many change models are rooted in Lewin's (1951) change process of unfreezing, moving, and freezing. Change models, such as Fullan's (2007) change theory exist depicting the change process specifically in schools. Fullan (2007) was also influenced by Lewin regarding his own theory, which consists of initiation, implementation, and institutionalization. Implementation consists of characteristics of change, local characteristics, and external factors. Within Fullan's (2007) model, the components that can be directly related to teachers are the characteristics of change, which include need, clarity, complexity, and quality/practicality.

MTSS is designed to provide the appropriate level of instruction and intervention to students in academic and behavioral areas (Gamm et al., 2012). MTSS has proven to be a successful framework for at-risk primary students (Bemboom & McMaster, 2013; Fagella-Luby & Wardwell, 2011; Fuchs, Fuchs, & Compton, 2010; King, Lemons, & Hill 2012). The basic three-tiered model has also been shown to positively impact secondary students, however most of the research is with behavioral and social needs (Flannery, Fenning, Kato, & McIntosh, 2014; Flannery, Frank, Kato, Doren, & Fenning, 2013; Swain-Bradway, Pinkney, & Flannery, 2015). There is a lack of systematic implementation of MTSS with a focus on academic instruction and intervention at the secondary level, despite the fact that there is a need (Duffy, 2007; Flagella-Luby & Wardwell, 2011; Pyle & Vaughn, 2012; Vaughn & Fletcher, 2010).

Understanding the components of the change process combined with the specifics of a reform may more closely tailor change implementation for success. Success with MTSS relies on the preparation and the compliance of teachers responsible for implementation with fidelity (Wilcox et al., 2013). With perception having an impact on successful implementation of change within organizations (Oreg et al., 2011), it is important to know and understand the impact that teacher perceptions can have on the implementation of a reform. Chapter III will focus on the methods to analyze teacher perception regarding MTSS implementation at the secondary level.

CHAPTER III

METHOD

As described in Chapter 1, the purpose of the current study was to examine teachers' perceptions of the impact of implementing a multi-tiered system of support (MTSS) to meet the diverse academic needs of middle and high school students within Fullan's (2007) implementation phase of the educational change process. Using Fullan's (2007) theoretical construct of educational change, the researcher examined four factors within implementation—need, clarity, complexity, and quality/practicality—as perceived by secondary teachers as well as the factors' relationship to the perceived success of MTSS. This chapter describes the methods and procedures used, including research questions, the research procedure, participants, and the measurement used. Finally, the chapter discusses the analysis of teacher perception data through a multi-item scale in regards to the four research questions posed.

Research Questions

The following research questions were used to guide the researcher in completing this study.

1. What are the perceptions of teachers' regarding the characteristics of change (need, clarity, complexity, and quality/practicality) relative to the implementation of MTSS?
2. What characteristics of change (need, clarity, complexity, and quality/practicality) predict teachers reported level of implementation success of MTSS?

3. Are there significant differences between general education and special education teacher's perceptions regarding characteristics of change with implementation of MTSS (need, clarity, complexity, and quality/practicality)?
4. Are there significant differences between middle school and high school teacher's perceptions regarding characteristics of change with implementation of MTSS (need, clarity, complexity, and quality/practicality)?

Procedure

Permission was obtained from the secondary superintendents from District A and District B to conduct survey research in their secondary schools. After obtaining IRB approval, the survey (See Appendix A) was administered via email to District B teachers starting on March 31st, 2017. A reminder email for survey completion was sent to District B teachers on May 2nd, 2017. District A was provided the recruitment email to post on March 31st, 2017. District A posted the research request on their site starting April 27th, 2017 and removed it one week later on May 4th, 2017. The recruitment email (See Appendix B) and post included a link to an online survey created through Qualtrics. A start date of March/April afforded teachers the opportunity to be fully immersed in the MTSS process yet relieved of the stresses that accompany starting a new semester.

Participants were provided with written informed consent acting as the first page of the survey, which was agreed upon by choosing to complete the survey questions (See Appendix C). The participants were instructed to read the informed consent and were provided the opportunity to provide consent by selecting that they acknowledge and understand what they have read. If participants didn't select the box that provides

consent, the survey did not begin. Survey questions were presented by construct and participants were not forced to answer questions prior to moving on to the next construct. Upon completion participants were given the opportunity to enter a drawing for one of two $50 Amazon gift cards using a separate link in order to maintain participant confidentiality. Data collection was open for two months with one reminder email sent out at the end of the first month. Data collection was monitored for stratification of groups and did not require follow up with specific demographics.

Participants

Participants included secondary (grades 6 – 12) general education teachers and special education teachers from two Class A, North Dakota school districts. MTSS was established in both school districts in the sample. Between the two districts, 843 secondary teachers were contracted for the 2016-2017 school year. Per district regulations, 464 teachers from District A were recruited via the district research website and 379 teachers from District B were recruited via email to complete the online survey.

The two North Dakota school districts involved in the study possess a district level MTSS team or coordinator that focuses on planning and implementation of MTSS district-wide. All participants were teachers who were employed in school buildings that were, at the very least, in the first year of full implementation of MTSS in reading and/or math. Of the 843 teachers in the available population, 742 (88.0%) were general education teachers, 101 (12.0%) were special education teachers, 368 (43.7%) were middle school teachers (grades 6 – 8), and 475 (56.3%) were high school teachers (grades 9 – 12).

The sample for the current study was composed of 129 secondary teachers resulting in a response rate of 15.3%. Stratification of groups regarding special education versus general education as well as high school versus middle school was monitored for appropriate numbers identified in each group to make statistical comparisons. The participants included in this study were due to their willingness to participate and their completion of the construct questions after that data was cleaned. Specific demographic information about the participants will be presented in Chapter 4.

Measurement Tool

A multi-item measurement instrument has been developed by the researcher for a cross-sectional study of implementation factors in relation to MTSS based on Fullan's (2007) educational change theory. A copy of the survey questions, constructs, and coding can be viewed in Appendix A. The purpose of the instrument is to measure characteristics and relationships among variables. The researcher developed scale items in order to reflect the four factors identified for implementation of a change, which include need, clarity, complexity, and quality/practicality. In addition, an MTSS success scale was developed by the researcher to measure perceived success. The implementation factors were examined via Fullan's (2007) *The New Meaning of Educational Change* in order to identify key components within each factor. Thirty-two self-report items were created based on the components within each of the four factors as presented in Fullan's (2007) change theory and tailored to reflect MTSS as the change initiative. Twenty-six of the 32 items were developed and categorized to reflect four constructs that aligned with the four factors of implementation and six items make up the success construct. The researcher

also developed ten demographic questions and one question assessing prior knowledge of MTSS following a definition that was created using components from Gamm et al. (2012) and Wilcox et al. (2013).

Need

Six items were created to reflect the important components of need as a factor of implementation. According to Fullan (2007) teachers may not be aware of, or informed of, the need for a change. Therefore, the items address the perceived need of MTSS as an academic priority (positively worded e.g., "There is a critical need for academic intervention."). Five items were positively worded and one item was negatively worded within the construct.

Clarity

The clarity construct includes six items that address the clarity of teachers on the goals and means of MTSS. Change implementation is successful when teachers fully understand what they are to do differently (Fullan, 2007). The five positively worded items and one negatively worded item were created to address components that reflect the clarity of teachers surrounding MTSS as a complex reform (negatively worded e.g., "I do not understand the purpose of MTSS.").

Complexity

Fullan (2007) notes that change can be examined through the complexity that is required of the individuals who are implementing it. In the case of MTSS a major factor of implementation are teachers. Seven items were developed to address difficulty, skill, beliefs or materials involved in MTSS (negatively worded e.g., "Implementing MTSS has

had a negative effect on my teaching."). Four of the items were positively worded and three of the items were negatively worded.

Quality and Practicality

Follow-up and preparation are necessary to generate the components needed for successful implementation (Fullan, 2007). Seven items were created to address the resources and support teachers perceive that they are receiving regarding MTSS implementation (negatively worded e.g., "The resources needed for MTSS are unsustainable."). Six items were positively worded and one item was negatively worded.

Success

The success construct consists of five items that measure the extent to which teachers perceive that their school staff is implementing MTSS successfully. Items were derived from the components necessary for MTSS as defined by Gamm et al. (2012) (positively worded e.g., MTSS interventions in my school are increasing students' reading and/or math skills). Four items were positively worded and one item was negatively worded.

Response Format

The response format for the items within the four constructs include five options that reflect teacher perception: 1 = Strongly Disagree, 2 = Somewhat Disagree, 3 = Neither Agree nor Disagree, 4 = Somewhat Agree, 5 = Strongly Agree. This response format was used for a combination of 23 positively worded items and eight negatively worded items. In addition to the items under the five constructs, one item with this

response format was included to measure teacher understanding of MTSS based on the following provided definition of MTSS.

> A multi-tiered system of support (MTSS) is designed so that schools can provide the appropriate level (intensive, strategic, core, or advanced) instruction and intervention based on student needs. In a standard protocol application of MTSS a standard set of empirically supported instructional approaches are implemented to prevent and remediate academic or social/emotional/behavioral deficits. Data-based decision making is used to determine the appropriate level and the effectiveness of instruction and intervention.

Since the instrument used in the study was created by the researcher, analysis of the internal consistency and factor loadings was conducted. The individual items within the four constructs from Fullan (2007) were averaged. The reliability as well as the correlations for each of the constructs are shown in Table 1. A scale with a Cronbach's Alpha value below .700 would be considered to have poor reliability (Warner, 2013). Removing items from the Clarity construct did not increase the internal consistency of the construct, therefore all items remained for analysis. Table 2 provides the results of the exploratory factor analysis, in which the number of factors to extract was specified to five after receiving seven factors without specification. Closer analysis of the Scree Plot from SPSS (version 24.0) (see Figure 1) shows that the slope of the curve levels off after five factors, and most greatly after one factor as can be observed from the factor loadings in Table 2. The items did not generally load on the factors that they were intended for with

some items loading on multiple factors. The five factor model accounts for 55.422% of the variance.

Table 1

Correlation of constructs and measures of internal consistency

Construct Number	Subscale Constructs	C1	C2	C3	α
C1	Need				.802
C2	Clarity	.427**			.610
C3	Complexity	.586**	.449**		.723
C4	Quality/Practicality	.505**	.536**	.626**	.708

***p* < .01.

Figure 1

Scree plot of factor loadings based on exploratory factor analysis and varimax rotation with Kaiser normalization

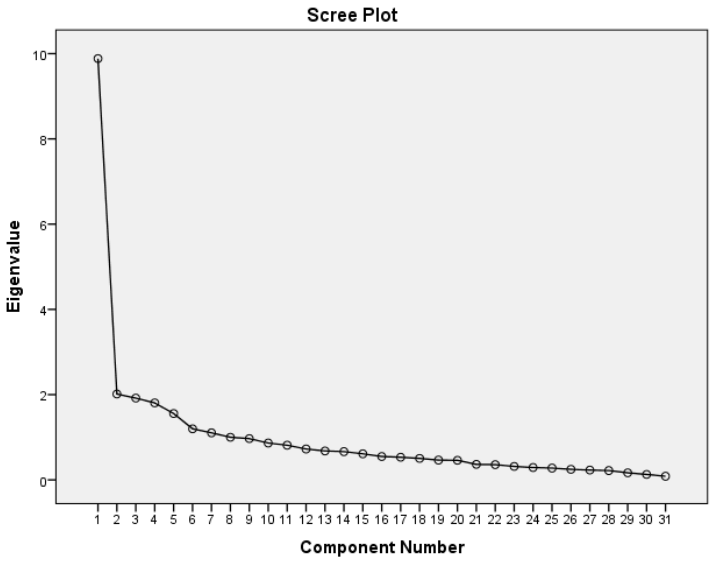

Table 2

Factor loadings based on exploratory factor analysis and varimax rotation with Kaiser normalization

Item	1	2	3	4	5
N1	.455	.346			
N2	.793				
N3	.410				
N4	.623				
N5	.600				
N6	.722				
CL1		.694			
CL2		.465		.378	
CL3				.601	
CL4		.570			
CL5		.426			
CL6			.626		
Cx1					.792
Cx2					.761
Cx3	.338		.701		
Cx4	.485		.554		
Cx5	.446		.633		
Cx6		.673	.301		
Cx7	.420	.480			
QP1				.818	
QP2				.801	
QP3		.490		.313	
QP4	.414	.356			
QP5	.300	.636			
QP6			.524		
QP7			.622		
S1	.718		.314		
S2	.796				
S3	.738			.304	
S4	.770				
S5	.457		.353		.360

The exploratory factor analysis using a varimax rotation did not separate the specific items into the five established constructs on the survey used in the study. Since the need, clarity, complexity, and quality/practicality constructs were developed out of

Fullan's (2007) theory of educational change, success was removed. An exploratory factor analysis assuming a correlation between items was conducted. The Scree Plot from SPSS (version 24.0) again showed that the slope of the curve levels off after five factors, and most greatly after one factor. The five factor model accounts for 54.331% of the variance.

Success was not added back in and an additional principle axis factor analysis using oblimin rotation was conducted on need, clarity, complexity, and quality/practicality. The number of factors to be extracted was set at four to represent the four factors of implementation in Fullan's (2007) theory of educational change. Analysis of the Scree Plot (see Figure 2) shows that the slope of the curve again levels off after five factors, and most greatly after one factor. The items did not separate out onto the intended four factors based on Fullan's (2007) educational change theory (See Table 3). Items from the need construct all loaded on one factor, however, they were not separate from some items from the complexity and quality/practicality construct. Five of the six clarity items loaded to one factor, complexity items loaded on two factors, and quality/practicality items loaded on three factors. The four factor model accounts for 48.614% of the variance.

Figure 2

Scree plot of factor loadings based on principle axis factoring and direct oblimin rotation with Kaiser normalization

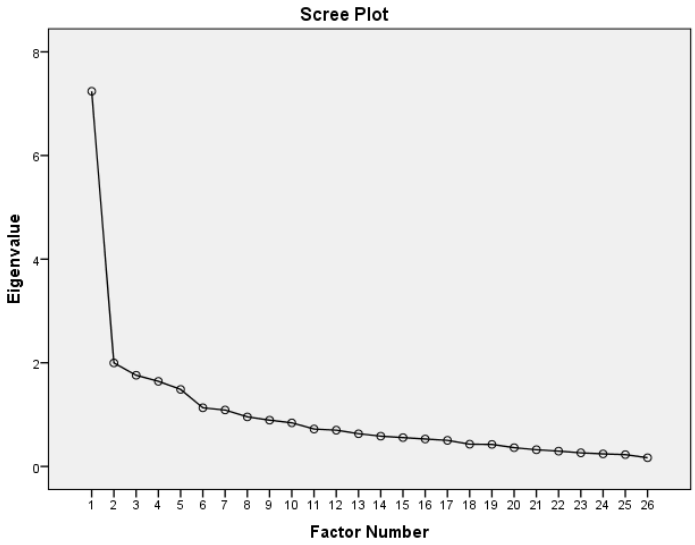

Table 3

Factor loadings based on principle axis factoring and direct oblimin rotation with Kaiser normalization

Item	1	2	3	4
N1	.410			
N2	.836			
N3	.576			
N4	.526			
N5	.583			
N6	.724			
CL1				-.597
CL2				-.435
CL3		.416		
CL4				-.427
CL5				-.351
CL6				-.359
Cx1			.633	
Cx2			.653	
Cx3	.599			
Cx4	.644			
Cx5	.642			
Cx6				-.657
Cx7	.320			-.414
QP1		.856		
QP2		.753		
QP3				-.462
QP4	.314			
QP5				-.565
QP6				
QP7	.411			

A follow-up factor analysis was conducted removing items that were double loading or cross loading. The items removed included CL3, Cx7, QP4, QP6, and QP7. From this final analysis the need and clarity constructs emerged clearly (See Table 4). The complexity construct loaded on three different factors and the quality/practicality construct loaded on two different factors (See Table 4).

Table 4

Factor loadings with items removed based on principle axis factoring and direct oblimin rotation with Kaiser normalization

Item	1	2	3	4
N1	.422			
N2	.869			
N3	.536			
N4	.534			
N5	.599			
N6	.753			
CL1			.636	
CL2			.398	
CL4			.439	
CL5			.366	
CL6			.408	
Cx1				.588
Cx2				.736
Cx3	.528			
Cx4	.586			
Cx5	.588			
Cx6			.654	
QP1		.844		
QP2		.763		
QP3			.442	
QP5			.529	

Data Analysis

After the data collection was closed, data analysis was conducted using SPSS (version 24.0). Assignment to analysis groups was based on self-reported demographic characteristics.

Research Question 1

What are the perceptions of teachers' regarding the characteristics of change (need, clarity, complexity, and quality/practicality) relative to the implementation of MTSS? Analysis of cross-sectional data included the use of descriptive statistics (See

Table 6), percentage of agreement for the four constructs, need, clarity, complexity, and quality/practicality (See Table 7), one-way within subjects ANOVA, and paired-samples *t*-tests (See Table 8). Grouping variables included teaching level and teaching type.

Research Question 2

What characteristics of change (need, clarity, complexity, and quality/practicality) predict teachers reported level of implementation success of MTSS? In order to determine if the factors of implementation are predictors of self-reported success, bivariate correlations (See Table 9) between the four characteristics of change and perceived success were conducted followed by a multiple regression (See Table 10). The independent variables consisted of the four factors of implementation and the dependent variable was the reported level of success.

Research Question 3

Are there significant differences between general education and special education teacher's perceptions regarding characteristics of change with implementation of MTSS (need, clarity, complexity, and quality/practicality)? In order to examine if the four implementation factors differed significantly across teaching type, a multivariate analysis of variance (MANOVA) was conducted with teaching type as the independent variable and the four implementation constructs as the dependent variables (See Table 11). Individual analysis of variance (ANOVA) tests would be conducted on the factors of implementation in the presence of significant MANOVA results. Practical significance was also reported through eta squared.

Research Question 4

Are there significant differences between middle school and high school teacher's perceptions regarding characteristics of change with implementation of MTSS (need, clarity, complexity, and quality/practicality)? In order to examine if the four implementation factors differ significantly across teaching level, a multivariate analysis of variance (MANOVA) was conducted with teaching level as the independent variable and the four implementation constructs as the dependent variables (See Table 12). Individual analysis of variance (ANOVA) tests would be conducted on the factors of implementation in the presence of significant MANOVA results. Practical significance was also reported through eta squared.

The researcher recognized that using MANOVA to answer research questions three and four comes with assumptions. Assumptions include normal distribution of the dependent variables, absence of multivariate outliers, linear relationship of dependent variables, and an absence of multivariate outliers.

Summary

Chapter III included information regarding the methodology used in the completion of this study. Additionally, there is information on the development of the survey based on Fullan's (2007) implementation phase of the change process. The results of the data analysis are presented in Chapter IV in narrative and tabular form. A summary of the study, conclusions regarding the study, limitations and recommendations are presented in Chapter V.

CHAPTER IV

RESULTS

Results of the quantitative data analysis are presented in this chapter. The focus of this study was to examine teachers' perceptions of the impact of implementing a multi-tiered system of support (MTSS) to meet the diverse academic needs of middle and high school students within Fullan's (2007) implementation phase of the educational change process. The study surveyed middle school and high school teachers in North Dakota. The data were collected and analyzed in a response to the research questions posed in Chapter I of this dissertation. Results of the quantitative data analysis are presented first in narrative form followed by tables to represent the statistical analysis. Data are arranged first by participant characteristics followed by the four research questions posed in this study.

Participant Characteristics

The sample was comprised of 129 teachers from two school districts in North Dakota. Table 5 lists the self-reported characteristics data about the participants. A majority of the sample were female (74.4%) and white (100%). There was not a large discrepancy between middle school (41.1%) and high school (58.1%) teachers for those who chose to report their teaching level. A majority of the population reported being general education teachers (79.1%) that teach a core subject area (62.8%).

Table 5

Participant characteristics

	Overall Sample Count (n = 129)	Percent of Participants
Gender		
Male	31	24.0%
Female	96	74.4%
Other	0	0%
Choose not to identify	2	1.6%
Ethnicity		
White/Caucasian	129	100%
African American/Black	0	0%
American Indian	0	0%
Asian American/Asian	0	0%
Mexican American/Chicano	0	0%
Puerto Rican American	0	0%
Other Latino	0	0%
Other (please specify)	0	0%
Current Teaching Level		
Middle School (Grades 6 – 8)	53	41.1%
High School (Grades 9 – 12)	75	58.1%
Current Teaching Type		
General Education Teacher	102	79.1%
Special Education Teacher	26	20.2%
Subject Category		
Core	81	62.8%
Elective	37	28.7%
		Average of Participants
Age in Years		37.7
Years of Experience		12.7
Reported MTSS Implementation		4.2

Research Questions

Research Question 1

What are the perceptions of teachers' regarding the characteristics of change (need, clarity, complexity, and quality/practicality) relative to the implementation of MTSS?

From the means calculated from the 129 teacher responses, it is evident that overall a majority of the teachers report some form of agreement regarding a majority of items (See Table 6) and all four constructs relating to the implementation of a change in respect to MTSS (See Table 7). Complexity of implementation, at 69.0% agreement was the area where perceptions demonstrated less agreement by teachers relative to the other three implementation constructs of need, clarity and quality/practicality. Looking at group variables, the same pattern followed for middle and high school as well as general education and special education. All groups reported, on average, some form of agreement in regards to all four variables, with perceptions of the complexity construct demonstrating less agreement among teachers. On average middle school teachers had a higher percentage of agreement than high school teachers and special education teachers had a higher percentage of agreement than general education teachers.

Table 6

Summary of item level descriptive statistics

Item	Construct	Range	Mean	SD
Familiarity	N/A	1 to 5	4.33	1.05
N1	Need	1 to 5	4.43	.74
N2	Need	1 to 5	4.47	.96
N3	Need	1 to 5	3.16	1.03
N4	Need	1 to 5	3.50	.99
N5	Need	1 to 5	4.13	.85
N6	Need	1 to 5	4.69	.60
CL1	Clarity	1 to 5	3.93	.99
CL2	Clarity	1 to 5	3.33	.95
CL3	Clarity	1 to 5	4.23	.84
CL4	Clarity	1 to 5	4.36	1.05
CL5	Clarity	1 to 5	3.49	1.21
CL6	Clarity	1 to 5	3.90	1.23
CX1	Complexity	1 to 5	2.33	.92
CX2	Complexity	1 to 5	2.58	.99
CX3	Complexity	1 to 5	3.66	.93
CX4	Complexity	1 to 5	4.02	1.08
CX5	Complexity	1 to 5	3.62	.92
CX6	Complexity	1 to 5	3.66	1.06
CX7	Complexity	1 to 5	3.64	1.16
QP1	Quality/Practicality	1 to 5	4.54	.64
QP2	Quality/Practicality	1 to 5	4.31	.89
QP3	Quality/Practicality	1 to 5	2.93	1.21
QP4	Quality/Practicality	1 to 5	3.40	1.16
QP5	Quality/Practicality	1 to 5	3.47	1.26
QP6	Quality/Practicality	1 to 5	4.29	.73
QP7	Quality/Practicality	1 to 5	3.19	1.04
S1	Success	1 to 5	3.98	.96
S2	Success	1 to 5	3.88	.97
S3	Success	1 to 5	3.93	.87
S4	Success	1 to 5	3.88	.86
S5	Success	1 to 5	3.09	1.21

Table 7

Descriptive statistics of teacher self-report data

Group Variable		Variable			
		Need	Clarity	Complexity	Quality/ Practicality
Middle School	Mean	4.09	3.91	3.31	3.73
(*n*=53)	SD	.51	.61	.60	.57
	Agreement	96.2%	86.8%	69.8%	88.7%
High School	Mean	4.03	3.84	3.39	3.75
(*n*=75)	SD	.62	.61	.64	.64
	Agreement	89.3%	84.0%	68.0%	84.0%
General Ed.	Mean	4.01	3.83	3.32	3.71
(*n*=102)	SD	.64	.64	.62	.63
	Agreement	91.2%	82.4%	68.6%	83.3%
Special Ed.	Mean	4.29	4.04	3.48	3.84
(*n*=26)	SD	.46	.49	.61	.57
	Agreement	96.2%	96.2%	69.2%	92.3%
All Teachers	Mean	4.06	3.87	3.35	3.73
(*n*=129)	SD	.62	.61	.62	.61
	Agreement	92.2%	85.3%	69.0%	85.3%

A one-way within subjects ANOVA was conducted to compare all teacher's perceptions of the characteristics of change including need, clarity, complexity and quality/practicality. There was a significant difference in the perceptions of teachers between the four characteristics of change, $F(3,384) = 64.13$, $p < .05$. Because a statistically significant result was found with the one-way within subjects ANOVA, six paired samples *t*-tests were used to make comparisons between the four characteristics of change. There were significant differences, with *p* values less than or equal to .007, regarding all teacher's perceptions of the four characteristics of change (see Table 8). Considering the means reported in Table 7, the results of the paired samples *t*-tests show that need was significantly higher than clarity, complexity, and quality/practicality.

Table 8

Paired samples t-tests of teacher's perceptions of the four characteristics of change

Means and standard error				Pairwise comparison			
	All Teachers						
	n	M	SE	Need	Clarity	Complexity	Qual/Prac
Need	129	4.063	.055		3.243*	14.305*	6.114*
Clarity	129	3.875	.054			9.150*	2.721*
Complexity	129	3.353	.055				-8.096*
Qual/Prac	129	3.733	.054				

* $p < .05$ (two-tailed)

Research Question 2

What characteristics of change (need, clarity, complexity, and quality/practicality) predict teachers reported level of implementation success of MTSS?

This question used teacher perception data to determine which of Fullan's four characteristics of change implementation predict perceived success regarding MTSS implementation. To assess these predictive factors, bivariate correlation and multiple regression were employed. Results in Table 9 show correlations computed among Fullan's (2007) four characteristics of implementation and perceived success from self-report data of 129 secondary teachers. The results show that all 10 correlations were statistically significant and were greater to or equal to $r(128) = .42$, $p < .001$. Looking specifically at the data between success and the four implementation factors, all correlations were positive, with need having the strongest correlation with success ($r(128) = .72$, $p < .001$) and clarity having the weakest correlation with success ($r(128) = .42$, $p < .001$).

Table 9

Bivariate correlation between need, clarity, complexity, quality/practicality, and success

	(1)	(2)	(3)	(4)
1. Need				
2. Clarity	.43**			
3. Complexity	.59**	.45**		
4. Quality/Practicality	.51**	.54**	.63**	
5. Success	.72**	.42**	.66**	.67**

** $p < .01$ (two-tailed)

The results of the multiple regression model with all four predictors in Table 10 addresses the predictive factors of success. The model with all four predictors produced $R^2 = .665$, $F(4, 124) = 61.41$, $p < .001$. As can be seen from Table 10, need, complexity, and quality/practicality contribute significantly at the coefficient level to the multiple regression model predicting perceived success. Although Table 9 shows a significant correlation between clarity and success, clarity did not contribute significantly to the multiple regression model when predicting success.

Table 10

Multiple regression analysis of implementation constructs

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	*t*	Sig.
Need	.588	.089	.442	6.623	.000
Clarity	-.063	.085	-.047	-.736	.463
Complexity	.290	.097	.218	2.976	.004
Quality/ Practicality	.449	.098	.333	4.597	.000
			R-square=.663		*p*=.000

Note. Dependent variable: self-reported success

Research Question 3

Are there significant differences between general education and special education teacher's perceptions regarding characteristics of change with implementation of MTSS (need, clarity, complexity, and quality/practicality)?

In order to determine if there was a significant difference regarding the implementation factors between general education teachers and special education teachers a one-way MANOVA was employed. One participant chose not to identify if they were a general education or special education teacher, therefore the sample size was reduced to 128 participants for this analysis. The results of the MANOVA show that there was not a statistically significant difference in Fullan's (2007) four factors of implementation based on teaching type, F (4, 123) = 1.24, p = .297; Wilks' Λ = .961, partial η^2 = .04. On average, the means for each of the four implementation categories were higher for special education teachers than for general education teachers (See Table 11). Since the MANOVA did not show statistical significance, separate ANOVA tests were not analyzed for the individual dependent variables.

Table 11

One-way MANOVA results with implementation factors as the dependent variable for teaching type

	General Education			Special Education		
Constructs	*n*	*M*	*SD*	*n*	*M*	*SD*
Need	102	4.01	.64	26	4.29	.46
Clarity	102	3.83	.64	26	4.04	.49
Complexity	102	3.32	.62	26	3.48	.61
Quality/Practicality	102	3.71	.63	26	3.84	.57

Additionally, covariates suspected to have an impact on scale items were analyzed in relation to the demographic teaching type. Pearson correlations were conducted for the following covariates, which included familiarity with MTSS (r = .009, p > .05), years of experience (r = -.043, p > .05), and years employed at the school (r = .143, p > .05). A multi-variate analysis of covariance (MANCOVA) was not performed to further test the differences between general education and teaching type because the correlations of the covariates were not at or above .200.

Research Question 4

Are there significant differences between middle school and high school teacher's perceptions regarding characteristics of change with implementation of MTSS (need, clarity, complexity, and quality/practicality)?

In order to determine if there was a significant difference regarding the implementation factors between middle school teachers and high school teachers a one-way MANOVA was employed. One participant chose not to identify if they were a middle school or high school teacher, therefore the sample size was reduced to 128 participants for this analysis. The results of the MANOVA show that there was not a statistically significant difference in Fullan's (2007) four factors of implementation based on teaching level, F (4, 123) = .680, p = .607; Wilks' Λ = .978, partial η^2 = .02. On average, the means for each of the four implementation categories were similar between middle school teachers and high school teachers (See Table 12). Since the MANOVA did not show statistical significance, separate ANOVA tests were not analyzed for the individual dependent variables.

Table 12

One-way MANOVA results with implementation factors as the dependent variable for teaching level

	Middle School			High School		
Constructs	*n*	*M*	*SD*	*n*	*M*	*SD*
Need	53	4.09	.51	75	4.03	.69
Clarity	53	3.91	.61	75	3.84	.61
Complexity	53	3.31	.60	75	3.39	.64
Quality/Practicality	53	3.73	.57	75	3.75	.64

Additionally, covariates suspected to have an impact on scale items were analyzed in relation to the demographic teaching level. Pearson correlations were conducted for the following covariates, which included familiarity with MTSS (r = -.085, p > .05), years of experience (r = .114, p > .05), and years employed at the school (r = .004, p > .05). A multi-variate analysis of covariance (MANCOVA) was not performed to further test the differences between general education and teaching type because the correlations of the covariates were not at or above .200

CHAPTER V

DISCUSSION

This chapter contains a summary of the purpose of the study and methods used, interpretation of the findings, limitations of the study, discussion, implications, and suggestions future research. The findings for the current study have implications for middle and high schools that are approaching or are within the implementation phase of a multi-tiered system of support (MTSS). The information in this chapter will be organized by first presenting the research questions, followed by the results, with the discussion of the information last.

Summary of the Study

The purpose of the study was to examine teachers' perceptions of implementing MTSS to meet the diverse academic needs of middle and high school students within Fullan's (2007) implementation phase of the change process. The study sought to answer the following research questions:

1. What are the perceptions of teachers' regarding the characteristics of change (need, clarity, complexity, and quality/practicality) relative to the implementation of MTSS?
2. What characteristics of change (need, clarity, complexity, and quality/practicality) predict teachers reported level of implementation success of MTSS?

3. Are there significant differences between general education and special education teacher's perceptions regarding characteristics of change with implementation of MTSS (need, clarity, complexity, and quality/practicality)?
4. Are there significant differences between middle school and high school teachers' perceptions regarding characteristics of change with implementation of MTSS (need, clarity, complexity, and quality/practicality)?

The results of the study are a representation of perceived understanding and practice of the four characteristics of change implementation by teachers exposed to MTSS in a secondary school. The results also represent perceived success of MTSS and if the teachers possess an understanding and belief of the four characteristics in order to employ successful educational change. It should be noted that the teachers who were surveyed were all employed in buildings that had established MTSS in at least one academic area. In addition, the districts that were included in the study had a district level MTSS team and/or coordinator. These factors may have contributed to a more agreeable response to the survey from participants. Participants may have been employed in buildings that have already defined or worked through need, clarity, complexity and quality/practicality surrounding MTSS implementation.

The sample included 129 secondary teachers from two districts in North Dakota. The teachers were surveyed in one district via email with a link to an electronic survey and in another district where they were able to follow a link to the electronic survey via the schools research website. There was a relatively equal representation of middle school teachers (41.1%) and high school teachers (58.1%). General education teachers

(79.1%) and special education teachers (20.2%) were similarly represented in regards to the ratio of the combined districts. Both core teachers (62.8%) and elective teachers (28.7%) were surveyed in which a majority (74.4%) were female and a minority (24.0%) were male. On average the participants were 37.7 years old and reported 12.7 years of experience in teaching. Not all teachers reported on every demographic question, however; 100% reported being Caucasian.

Interpretation of Findings

Research Question 1

In regards to Fullan's (2007) four characteristics of change, on average the 129 teachers surveyed had some form of agreement for all characteristics. Individually, the need construct demonstrated the highest mean (4.06) for all teachers and was the only construct to result in an average rating above a 4 (agree). Additionally, when data was analyzed by groupings including special education, general education, middle school, and high school, the need construct was the only construct on average that was above a rating of a 4 for all groups. This data was supported by the statistical significance of the ANOVA ($F(3,384) = 64.13$, $p < .05$) and the paired samples *t*-tests (see Table 8) that resulted in need being statistically different from the other three implementation constructs. The other three constructs, clarity, complexity, and quality/practicality, for all raters were, on average, above the neutral rating of 3 (neither agree nor disagree), but did not reach the threshold of a 4 (agree). The only subgroup with an average rating above 4 (agree) for a construct other than need was special education in regards to the clarity construct (4.04).

In the two North Dakota school districts surveyed in schools with active MTSS initiatives, teachers' ratings reflect an understanding and knowledge beyond a neutral standpoint of need, clarity, complexity, and quality/practicality. At the item level, success of MTSS was also perceived by teachers to be beyond the neutral standpoint of neither agree nor disagree. Addressing the first hypothesis, the data shows that in schools that are implementing MTSS the perceptions of the characteristics of change are high. The results showed that this was statistically significant regarding the need construct. The emphasis on need could be in response to the pedagogical shift that is required to implement MTSS, which may make the perception that the change is needed important for teachers to adjust to the change (Sanger et al., 2012; Wilcox et al., 2013). Need also may have been statistically higher than the other change factors since, in successful educational change, the need for the change becomes further clarified as implementation progresses (Fullan, 2007). With participants being from school districts who have been practicing MTSS for at least a year, they may have a deeper understanding of the need for MTSS.

Research Question 2

In Fullan's (2007) research all four characteristics (need, quality, complexity, and quality/practicality) work on a continuum to support successful implementation of educational change. Within the scope of this research all four factors showed significant positive correlations with perceived success of MTSS. The four characteristics also have strong positive correlations with one another. Within the dataset, all the implementation characteristics have a positive relationship with perceived success. The second hypothesis was not supported as complexity and quality/practicality did not equally predict success.

Although all characteristics created a significant model as a predictor of success, need is the strongest predictor of success. Quality/practicality was the second strongest predictor of success followed by complexity. Clarity did not significantly contribute to predicting success of MTSS.

Clarity requires that teachers understand how MTSS changes their role (Fullan, 2007). Since the survey focused on academic intervention, teachers who may be involved in fine arts may have an oversimplified view of the change. The two districts involved in the study have reading and/or math interventions in place along with staff appointed to the implementation of MTSS at the school or district level. First, the focus on reading and math may lead teachers in other core academic areas to believe that MTSS does not change their role. Teachers outside of reading and math instruction may not have experienced the shift in thinking about how they deliver instruction (Fullan, 2007). Second, the logistics that are in place regarding MTSS, such as support staff, data-based placement, and specific curriculum, may overshadow the abstract goal of MTSS (Fullan, 2007). This may cause teachers who are not directly delivering the intervention to lack clarity around MTSS or to link clarity of MTSS to success.

Research Question 3

The third hypothesis of the current study predicted that special education teachers would be more likely to recognize the characteristics of change than general education teachers. When the population was split for teaching type, the sample size decreased to 128 due to one participant not selecting special education or general education on the survey. Within this dataset there was not a significant difference between general

education and special education teachers regarding implementation factors of change. The reported means of all four of the implementation factors were higher for special education teachers than general education teachers, but the differences were not significant.

Correlations were conducted considering covariates to further analyze potential differences between special education and general education. The covariates that were analyzed were included due to the fact that they may have an effect on the teacher's perception of MTSS. First, familiarity with MTSS was included because it may indicate a deeper understanding under the four factors of change regarding MTSS. Second, years of experience was included because it may skew perception in either a positive or negative way about MTSS as an educational change. Last, years employed at the current school was considered because the two districts that were surveyed have been working toward systemic implementation of MTSS. Therefore, the number of years a teacher has been employed at their current school could potentially impact the perception of MTSS. For this study, the correlations did not warrant further analysis nor were they significant.

Research Question 4

The fourth hypothesis of this study predicted middle school teachers would be more likely to recognize the four characteristics of change implementation than high school teachers. When the population was split for teaching category, the sample size decreased to 128 due to one participant not identifying if they were a middle school or high school teacher. Within this dataset there was not a significant difference between middle school and high school teachers regarding implementation factors of change. The

reported means for need and clarity were higher for middle school teachers and the means for complexity and quality/practicality were higher for high school teachers, though not statistically significant. The same covariates as discussed for research question 3 were also considered when comparing middle school and high school teachers. Similar to the results of the analysis for research question 3, the correlations conducted did not warrant further analysis nor were they significant.

Discussion

Fullan (2007) notes that implementation is a large hurdle when it comes to practice. While there are other factors, local characteristics and external factors, that impact change implementation the focus of this paper was surrounding characteristics of the innovations themselves. Specifically, how need, clarity, complexity, and quality/practicality are perceived by teachers in middle schools and high schools regarding the implementation of MTSS. Since both North Dakota school districts included in the study are, at some level, successfully implementing MTSS in secondary settings, the findings are reflective of the involvement of Fullan's (2007) characteristics of change within this process.

The importance of teacher's perception of change in education is not an unexplored topic in the research (Burks et al., 2015; Crawshaw, 2015; Ellett, Demir, & Monsaas, 2015). However, even studies that broach the topic of MTSS and teacher perception are often seeking to define the perceptions of teachers. For example, a qualitative study conducted by Castro-Villarreal, Rodriguez, & Moore (2014) defined four themes to teacher perceptions regarding Response to Intervention (RtI) including

overall understanding, barriers, suggestions for improvement, and suggestions for improving paperwork. This research is important in knowing and understanding teacher perceptions, however, it may not always be practical to generalize to other settings or different context. Using Fullan's established theory of change as a way to navigate teacher perceptions of MTSS allows a link between a research-based change model and teacher's perception and understanding of an educational initiative.

The current study shows that teachers who have some form of agreement that MTSS is a success at their building also demonstrate understanding and agreement with all four of Fullan's (2007) characteristics of change (see Table 7). From the survey data, need emerged significantly as the strongest characteristic predicting perceived success, suggesting that MTSS is addressing what teachers perceive as a priority. *In other words, MTSS has addressed and met a need in the schools that is recognized by teachers.* Teachers who were surveyed also demonstrated an understanding of the purpose and practices of MTSS through the clarity construct. Similar to clarity, the quality and practicality of MTSS was rated above a neutral level suggesting that the population recognized quality and ease in the implementation within their building. The complexity construct had the lowest percentage of agreement, although still a majority, suggesting that difficulty or extent of the change required was not as important to perceived success as the other characteristics. This does not indicate that complexity is not important for implementation. It could be possible that in the populations surveyed that the difficulty in implementation was not experienced by all or the benefits of MTSS outweighed the level of complexity (Fullan, 2007). This result could also indicate that within the two districts

surveyed that the complexities of MTSS unique to the secondary level, such as schedule adjustments, have been addressed and structures were in place prior to implementation (Flannery et al., 2013; Fuchs et al., 2010).

Analyzing what characteristics predict perceived success resulted in a significant model, which included all four characteristics, need, clarity, complexity, and quality/practicality. Taking a closer look, need emerged as the characteristic that had the most influence on perceived success. Even research on individual teacher perception shows that individuals must find meaning concerning a proposed change (Vandeyar, 2016). When looking at creating a successful change implementation there is a clear relationship between success and the recognition and understanding that there is an unmet need in the school and that the proposed change is going to meet that need. Interestingly, clarity did not significantly contribute to the model predicting success (see Table 10) despite the significant positive correlation the characteristic had with success (see Table 9). Fullan (2007) suggests that often change is interpreted in an oversimplified way resulting often in what he calls false clarity. It does not appear that the participants in this study have false clarity of MTSS, it may just be that the other three factors carry more weight for perceived success at the stage of implementation the schools are in. It would appear unlikely that in the beginning stages of a change implementation that clarity would not be needed for implementation success as the two factors correlate positively in this study.

As noted, no significant differences were found between general education teachers and special education teachers nor between middle school teachers and high

school teachers in regards to the four characteristics measured. Some of the means for individual characteristics align with the research (Regan, Berkeley, Hughes, & Brady, 2015; Swanson, Solis, Ciullo, & McKenna, 2012), specifically when discussing general education versus special education. However, in this study all teachers appeared to have a similar agreement and understanding of Fullan's (2007) characteristics of change in regards to MTSS implementation. This does not discount documented differences in teacher populations but could suggest an advanced stage of implementation in the two school districts that were included in the survey. Perhaps these types of dichotomies are observed in an early phase of implementation or during the initiation of a change.

Overall the research suggests that there is a positive correlation between perceived success of MTSS and Fullan's (2007) characteristics of change including need, clarity, complexity, and quality/practicality. Beyond that, the four characteristics together create a model to predict perceived success, each contributing at varying levels. The characteristics, which are a result of extensive research by Fullan (2007), have been demonstrated to be present in practice and to significantly contribute to implementation success in regards to MTSS in secondary settings. In light of the lack of differences between categories of teachers regarding the four characteristics, the overall relationship to perceived success demonstrates the importance in addressing these characteristics with all teachers while implementing MTSS.

Implications

The findings of this study link Fullan's (2007) characteristics of change to implementation success of MTSS in secondary schools. These findings can have

significant implications for middle and high schools looking to implement MTSS or that are having difficulty implementing MTSS. Specifically, how school leadership can address and influence teacher perception when leading a change.

Fullan's (2007) educational change theory addresses three interactive factors that influence change implementation. For school leaders who want to address practical change within their building, the results of this study can have a positive impact. At the ground level, school leaders can plan and prepare change regarding MTSS in the context of helping teachers understand the need, clarity, complexity, and quality/practicality of the initiative. Even further, the current study shows that a high predictor of perceived success of MTSS implementation is the need characteristic. Leadership should make sure to establish the need for students as well as show how MTSS can meet the needs of the building staff. This link between theory and practice provides school leadership with a roadmap when rolling out MTSS and categorizes the information that needs to be established for teachers in order to create success.

This research shows that there is a predictive factor between need, clarity, complexity, and quality/practicality in regards to perceived success of MTSS. Even if the characteristics were not addressed prior to implementation, in the face of unsuccessful implementation of MTSS school leadership can analyze each of the four characteristics to see where they can target their efforts with teachers. Analysis of Fullan's research could be conducted or a dissemination of the survey created for this study could occur in order to understand teacher perceptions in regards to MTSS. However, teacher perceptions that are obtained regarding the four characteristics of Fullan's (2007) change model should be

used to address the areas of weakness. This could potentially have the impact to reduce the number of failed initiatives in education, at least regarding MTSS.

Although this study did not note significant differences between categories of teachers it does not mean that they do not exist in other settings. For schools that may be having difficulty between categories of teachers regarding MTSS implementation, comparing teacher perceptions of MTSS implementation using the four characteristics could provide insight on where strengths and weakness are between groups. The study does not provide information on assuming one group will have higher agreement and knowledge regarding the four characteristics, but it does demonstrate the link between the characteristics for all teachers and perceived success. The survey could be disseminated to teachers and comparisons could be made regarding the level of agreement for each of the four characteristics for each teaching category. School leadership could then focus their efforts on a specific population and specific characteristic in order to solidify the successful implementation of MTSS.

Limitations

The current study generated data through an online survey to teachers. Data generated from a survey may not be robust enough to explain complex issues that arise. The aim of the study was to understand teacher perception of the characteristics of change but did not delve into why they have those perceptions. Future research may look into the underlying reasons why. Survey data also relies on self-reporting and as it was completed remotely and anonymously so there is no way that responses can be independently verified. The small sample size may have been impacted by the remote

dissemination of the surveys. Another factor of the small sample size may be attributed to the limitations of one school district to individually email teachers, requiring the link be posted to a district research page. These factors may have created a circumstance where all teachers in the population were not exposed to the survey.

The scope of the current study was within two small geographical areas in the Midwest. The participants surveyed were all from comprehensive middle and high schools that serve similar demographics with grade level sizes of 300 or more. Participants also lacked diversity, as 100% of the population reported that they were Caucasian. The specificity of the sampled population is due to the knowledge and understanding that staff in the secondary buildings are implementing MTSS and that the districts have a district-level MTSS committee and coordinator. The limited scope ensures that MTSS is being implemented but may limit the generalizability of the findings to schools or districts similar in scope. The demographics of the participants may also limit the generalizability of the findings to schools within the Midwest of similar size with a majority Caucasian teaching staff.

The instrument used for the study measures specific characteristics of change within the scope of MTSS that occur during the implementation phase of Fullan's (2007) change model. The instrument had to be created due to the lack of prior research covering MTSS and Fullan's (2007) change theory together, which creates a limitation in laying the foundation of the research from other studies. Most items load strongly on factors one and two and do not equally load across four factors as the questions written were intended (see Table 2). It appears that the tool has isolated need from Fullan's (2007)

change theory, representative of the need for implementation, and has combined clarity, complexity, and quality/practicality into another factor that encompasses actual implementation processes. The model for the survey tool was specified to have four factor, as that was the established number of implementation characteristics through Fullan's (2007) research. When correlation was assumed a majority of the items loaded on two factors (See Table 3). Only items from the need construct all loaded on one factor, but this was not isolated from other factors. When items were removed need and clarity clearly emerged as factors leaving complexity and quality/practicality needing further revisions. The further work required on complexity and quality/practicality may be the reason that more results did not emerge in the analysis of the data in this study, specifically for research question 3 and research question 4. This suggests that there is a problem with the items properly reflecting two of the four constructs of Fullan's (2007) implementation phase of change.

In general, research on MTSS at the secondary level is limited (Bemboom & McMaster, 2013; Sansoti, Noltemeyer, & Gross, 2010). Application is occurring in middle and high schools, but it is mostly guided by research from lower grade levels. Additionally, there has yet to be an instrument created to assess MTSS within Fullan's (2007) educational change theory. Although the instrument used in the study requires revisions and study, the results of the study may add to the foundation of future research.

Future Research

In order to establish a foundation for research specific to the instrument in this study, future research could focus on establishing validity and reliability of the tool.

Repeated administration of the tool and analysis of the construct's internal consistency would need to be conducted to establish the survey. Also, research could be conducted on modification of questions within the context of Fullan's characteristics, specifically complexity and quality/practicality, to address the factor loadings that were established in this study. Overall, the more that the tool is disseminated and statistically analyzed the more it can be reliably used in practice to influence change implementation.

Future research could also focus on different regions and school sizes in order to increase the generalizability of the outcomes. The population in this study was homogeneous regarding race and is localized to a specific region of North Dakota. MTSS, however, is a national initiative in education and the research should reflect a more diverse population. Future studies could focus on different demographics, geographical locations, and school size. Future research on a larger scope could also compare the aforementioned factors in order to determine any differences or similarities.

A final suggestion for future research would be to focus on the stage of implementation of MTSS that the school is in. The current study surveyed teachers from school districts that have been fully implementing MTSS for multiple years. It could be informative to practitioners if research was conducted early on in implementation as well as after implementation of MTSS has been established. Research could show if there were differences or commonalities related to the amount of time MTSS has been implemented and could also focus on the link between the four characteristics of change and perceived success as implementation progresses through time.

APPENDECIES

Appendix A

Survey Code Book

DEMOGRAPHIC VARIABLES

Name	Item
Gender	Your gender is: (1) Male (2) Female (3) Other (4) Choose not to identify
Age	Your age in years is: (enter years)
Ethnicity	Your ethnicity is (select one or more): (1) White/Caucasian (2) African American/Black (3) American Indian (4) Asian American/Asian (5) Mexican American/Chicano (6) Puerto Rican American (7) Other Latino (8) Other (please specify)
Experience	Enter your years of experiences in teaching: (enter years)
Current Teaching Level	What best describes your teaching assignment: (1) Middle School (Grades 6 – 8) (2) High School (Grades 9 – 12)

Current Teaching Type	What best describes you: (1) General Education Teacher (2) Special Education Teacher
Current Teaching Area	What best describes you: (1) Core Subject Teacher (2) Elective Subject Teacher
Current Teaching Role	Please list your subject area: (enter area taught)
Years at Current School	What is the number of years that you have worked at your current school: (enter years)
Years Implementing MTSS	To your knowledge how many years has your school been implementing MTSS: (enter years)

Directions for Part I

Please read the following paragraph and mark one response to the question below.

A Multi-Tiered System of Support (MTSS) is designed so that schools can provide the appropriate level (intensive, strategic, core, or advanced) of instruction and intervention based on student needs. In a standard protocol application of MTSS a standard set of empirically supported instructional approaches are implemented to prevent and remediate academic or social/emotional/behavioral deficits. Data-based decision making is used to determine the appropriate level and the effectiveness of instruction and intervention.

F1	Prior to reading the above paragraph about MTSS, I had an understanding of the basic concepts of MTSS?	Strongly Disagree	Somewhat Disagree	Neither Disagree or Agree	Somewhat Agree	Strongly Agree

Directions for Part II (Questions)

For each item, please mark the number that most closely reflects your perceptions. Each number represents a particular response as indicated below.

(Do teachers perceive that MTSS is an academic priority need?)

Need of Key Stakeholders		**Strongly Disagree**	**Somewhat Disagree**	**Neither Disagree or Agree**	**Somewhat Agree**	**Strongly Agree**
N1	There is a critical need for academic intervention.	1	2	3	4	5
N2	My school does not need MTSS. (R)	1	2	3	4	5
N3	MTSS should be a priority over other reading and/or math initiatives.	1	2	3	4	5
N4	MTSS appropriately addresses students' reading and/or math needs.	1	2	3	4	5
N5	Leveled intervention is necessary for student learning.	1	2	3	4	5
N6	Students at my school do not need reading and/or math intervention. (R)	1	2	3	4	5

(Are the goals and means perceived to be clear by teachers regarding the implementation of MTSS?)

Clarity of Key Stakeholders		**Strongly Disagree**	**Somewhat Disagree**	**Neither Disagree or Agree**	**Somewhat Agree**	**Strongly Agree**
CL1	I understand how MTSS differs from other academic initiatives at my school.	1	2	3	4	5
CL2	Other teachers are knowledgeable about MTSS.	1	2	3	4	5
CL3	School administration is knowledgeable about MTSS.	1	2	3	4	5
CL4	I do not understand the purpose of MTSS. (R)	1	2	3	4	5
CL5	Alternate core should be available to all students.	1	2	3	4	5
CL6	All teachers should be responsible for providing intervention.	1	2	3	4	5

(What is the perceived difficulty for teachers regarding the implementation of MTSS?)

Complexity of Implementation		**Strongly Disagree**	**Somewhat Disagree**	**Neither Disagree or Agree**	**Somewhat Agree**	**Strongly Agree**
Cx1	It is difficult to shift teacher beliefs regarding core content delivery to support MTSS. (R)	1	2	3	4	5
Cx2	Strategies necessary to implement MTSS successfully are complex. (R)	1	2	3	4	5
Cx3	The skills needed to implement MTSS are manageable for teachers.	1	2	3	4	5
Cx4	Implementing MTSS has had a negative effect on my teaching. (R)	1	2	3	4	5
Cx5	MTSS is manageable for teachers to implement at my school.	1	2	3	4	5
Cx6	I understand how to effectively implement MTSS.	1	2	3	4	5
Cx7	The process of student placement into MTSS is understandable.	1	2	3	4	5

(What is the perception of the resources and support teachers are provided regarding the implementation of MTSS?)

Quality/Practicality of Implementation		**Strongly Disagree**	**Somewhat Disagree**	**Neither Disagree or Agree**	**Somewhat Agree**	**Strongly Agree**
QP1	Building administration is supportive of MTSS.	1	2	3	4	5
QP2	District administration is supportive of MTSS.	1	2	3	4	5
QP3	The necessary professional development was provided to implement MTSS.	1	2	3	4	5
QP4	My daily schedule accommodates components of MTSS.	1	2	3	4	5
QP5	My school has Intervention class sizes small enough to provide quality intervention.	1	2	3	4	5
QP6	Resources devoted to MTSS should be evidenced based.	1	2	3	4	5
QP7	The resources needed for MTSS are unsustainable. (R)	1	2	3	4	5

(To what extent do teachers perceive that their school is implementing MTSS successfully?)

Success of MTSS		**Strongly Disagree**	**Somewhat Disagree**	**Neither Disagree or Agree**	**Somewhat Agree**	**Strongly Agree**
S1	MTSS in my building is an effective way to provide students with academic intervention	1	2	3	4	5
S2	MTSS interventions in my school are increasing students' reading and/or math skills.	1	2	3	4	5
S3	MTSS in my building is effective in identifying students who need academic interventions.	1	2	3	4	5
S4	MTSS is yielding positive student growth.	1	2	3	4	5
S5	MTSS implementation at my building is flawed (R)	1	2	3	4	5

Appendix B

Recruitment Email/Website Post

Greetings,

My name is Shannon Mortrud and I am currently a doctoral student in the Educational Leadership program at the University of North Dakota. I am conducting a research study about a Multi-Tiered System of Support (MTSS) at middle and high school in relation to implementing change. The survey is intended for general education and special education classroom teachers. If you are willing to take **5 to 10 minutes** to complete a survey for this project, please click the link below. Participation is voluntary and your answers will be anonymous. Upon completion, you can enter to win one of two $50 Amazon gift cards.

If you are interested, please click on the link (you have to hit ctrl before clicking the link) for the survey and additional information:

https://und.qualtrics.com/SE/?SID=SV_2tWecMI2fdOBXet

If you have any questions do not hesitate to contact me: shannon.mortrud@NDUS.edu.

Thank you for your time.

Shannon Mortrud, Psy.S.
Doctoral Student
University of North Dakota

Appendix C

Informed Consent

Title of Project:
Academic Intervention in Secondary Schools: Examining Teachers' Perceptions of Implementing a Multi-Tiered System of Support (MTSS)

Principal Investigator: Shannon Mortrud, 701.499.1972, shannon.mortrud@NDUS.edu

Advisor: Dr. Larry Klundt, 701.777.3738, larry.klundt@und.edu

Purpose of the Study:
The purpose of this study will be to examine teachers' perceptions of implementing a multi-tiered system of support (MTSS) to meet the diverse academic needs of middle and high school students within Fullan's (2007) implementation phase of the change process.

Procedures to be followed:
You will be asked to answer 40 questions on a survey regarding your perceptions of a multi-tiered system of support (MTSS). The questions are a mix of eight demographic questions, one knowledge question and 31 Likert style questions addressing different factors of MTSS implementation.

Risks:
There are no risks in participating in this research beyond those experienced in everyday life.

Benefits:
- This research may provide information to schools on factors that need to be addressed in schools for successful implementation of MTSS.
- This research may aid in making the change process in schools easier for faculty.

Duration:
The survey will take 5 to 10 minutes to complete.

Statement of Confidentiality:
The survey does not ask for information that would identify who the responses belong to. Therefore, your responses are recorded anonymously. If this research is published, no information that would identify you will be included since your name is in no way linked to your responses.

All survey responses that we receive will be treated confidentially and stored on a secure server. However, given that the surveys can be completed from any computer (e.g., personal, work, school), we are unable to guarantee the security of the computer on which you choose to enter your responses. As a participant in our study, we want you to be aware that certain "key logging" software programs exist that can be used to track or capture data that you enter and/or websites that you visit.

Right to Ask Questions:
The researcher conducting this study is Shannon Mortrud. If you later have questions, concerns, or complaints about the research please contact Shannon Mortrud at 701.330.5745 or Dr. Larry Klundt 701.777.3738 during the day.

If you have questions regarding your rights as a research subject, you may contact The University of North Dakota Institutional Review Board at (701) 777-4279. You may also call this number with problems, complaints, or concerns about the research. Please call this number if you cannot reach research staff, or you wish to talk with someone who is an informed individual who is independent of the research team.

General information about being a research subject can be found on the Institutional Review Board website "Information for Research Participants" http://und.edu/research/resources/human-subjects/research-participants.cfm

Voluntary Participation:
You do not have to participate in this research. You can stop your participation at any time. You may refuse to participate or choose to discontinue participation at any time without losing any benefits to which you are otherwise entitled.

You do not have to answer any questions you do not want to answer.

You must be 18 years of age older to consent to participate in this research study.

Completion and return of the survey implies that you have read the information in this form and consent to participate in the research.

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