Examining the interaction of academic optimism, enabling school structures, middle level practices, and academic achievement

Vikki Wandmacher

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Examining the Interaction of Academic Optimism, Enabling School Structures, Middle Level Practices, and Academic Achievement

by

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Dedication

This dissertation is dedicated to my husband, who encouraged me to pursue my dreams, and steadfastly supported me throughout many years of study and the process of researching and writing. I also dedicate this to my mother and daughters, whose unfailing belief in me has carried me to the end. My sincere appreciation to all the friends and family whose encouragement has been tremendously important. This accomplishment would not have been possible without them all. Thank you.
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I consider it an honor to work with my Committee Chair, Dr. Williamson, as without his guidance and persistent help, this dissertation would not have been possible.

It is with gratitude that I acknowledge the support and help of Dr. Anderson, whose assistance was invaluable.

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Abstract

This study focused on young adolescent development, middle grades education, and the underlying supporting structures that assist students in achieving academically. Results were examined through the lens of Bandura’s social cognitive theory, and a big picture view of the interplay of beliefs, behavior, and environmental influences emerged. The study examined three ideas: (a) the level of academic optimism (AO), enabled school structure (ESS), middle level strategy implementation, and academic achievement; (b) how the implementation of middle level strategies and School to Watch (STW) status affected the level of AO, and ESS; and (c) how the factors of AO, ESS, STW status, and middle level strategy implementation impacted the academic achievement of students in math and reading. Data were collected through AO and ESS surveys completed by 210 teachers and demographic information provided by 29 principals and the Michigan Department of Education. Findings revealed that factors of free and reduced lunch recipients with school size and location had a significant relationship with middle level certification, middle level training, and interdisciplinary teaming. These in turn had a significant relationship to AO and ESS, which were beliefs within the school. This study supported previous findings that AO supported by enabled ESS had an even greater effect upon academic achievement than even socioeconomic status. Middle school staff working to improve student achievement could identify their readiness through an examination of the ESS, AO, and STW surveys, and using this data, the administrator could collaborate with staff to structure a building climate with appropriate middle level strategies to meet student needs.
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Chapter 1: Introduction

The clock strikes 3:30 p.m. and the quiet sidewalks outside a large Midwestern middle school are suddenly flooded with sixth, seventh, and eighth graders of every shape, size, and color. The students have diverse economic, religious, and cultural backgrounds. Some race for their bus, their ride, or just to catch up with a friend; others proceed quietly to their destinations. Each day I watch these faces, representative of the diversity in the U.S., and consider how successfully the school is providing the skills they need to control their own futures. Malcolm X (1964) said, “Education is the passport to the future, for tomorrow belongs to those who prepare for it today.” Will these students be prepared for their future?

This study examined the relationship between the implementation of middle level strategies with culture and structure variables found to have a positive effective on students’ academic achievement regardless of their socioeconomic status. Developing a better understanding of how these variables interact provided information about the structure and culture of effective middle schools.

Statement of Problem

Adolescence is a trying time for children as they experience rapid physical, emotional, and social growth (Caskey & Anfara, 2014). These changes are unlike any other period in their lives, as they discover their uniqueness and strive for independence, yet yearn for guidance and role models (Alexander et al., 1969). Young adolescents are vulnerable to negative influences and poor decision-making during this epoch in their development (Caskey & Anfara, 2014). Middle level theory posits that this exceptional time requires a distinctive whole school support system to assist students in moving positively through the transitions (Erb, 2005). The middle level concept promotes well-known strategies to be
employed in middle schools, yet school systems frequently struggle to fully implement these (Erb, 2005). After 50 years, the middle school movement appears stalled (Schaefer, Malu, & Yoon, 2016), and schools still seek ways to raise student achievement. Exploring the interaction between the underlying structure and culture of Michigan middle schools that have implemented middle level strategies as measured by the School to Watch (STW) rubric and schools that have not may provide an understanding of the effectiveness of these strategies in meeting adolescent needs.

Background

Middle level theory establishes a vision of a whole school focused on meeting the needs of adolescents through the implementation of specific structures and strategies (Erb, 2005; Lipsitz, 1984) that involve the creation of a school built on strong academics and a collaborative and engaging culture that builds relationships with the students and their families (Erb, 2005; National Association of Secondary School Principals, 2006; Jackson & Davis, 2000). A key ingredient includes built-in flexibility for the staff to meet student needs as they arise (Jackson & Davis, 2000; Lipsitz, 1984). The National Forum to Accelerate Middle Grades Reform (n. d.) initiated the STW program to promote these structures and strategies through a supportive and evaluative pathway.

This study examined these ideals through the lens of Bandura’s (1986) social cognitive theory with its triadic reciprocality of personal factors, behavior, and environmental influences. The personal factors include the beliefs of the teachers within the school as measured by the academic optimism (AO) survey; a latent variable formed by academic emphasis (AE); collective efficacy (CE); faculty trust in parents and students (FT; Hoy, Tarter, & Woolfolk-Hoy, 2006); and the enabling school structures (ESS) survey,
which examines the flexibility within the bureaucratic system of the school (Hoy & Sweetland, 2001). The behavior within the school will be represented by the middle school’s attainment of STW status or lack thereof, the implementation of middle level concept, and the academic achievement scores of the students as measured by their state M-Step exams in the areas of mathematics and English language arts (ELA). The environmental influences will be examined through the social economic status of the students as measured by the percentage of students receiving free and reduced lunch, the location of the school, size of enrollment, and demographics. Examination of the interaction of these variables expands the understanding of how these climate and structural factors affect student achievement at the middle school level.

Very little research examines the interaction of middle school strategies with AO and ESS. Most previous studies have shown that AO and ESS positively affect academic achievement in spite of socioeconomic status (SES) within high schools (Hoy et al., 2006) and within elementary schools (McGuigan & Hoy, 2006; Wu, Hoy, & Tarter, 2013).

Understanding the relationship of these variables with middle school strategies provided information to middle school leaders who strive to improve student academic achievement. This study also provided additional data about the strength of AO and ESS in promoting positive academic achievement for students in middle schools regardless of socioeconomic status, as previous studies have found mixed results. The research on each of the variables is discussed to understand the prior research and how it sets the stage for this study.
Purpose of the Study

This study examined the relationship between the AO of staff, the extent to which ESS existed, a school’s STW status, its implementation of middle level strategies, and the academic achievement of the students in Michigan middle schools. Examining the interaction of these variables will expand the understanding of how these climate and structural aspects affect student achievement at the middle school level.

To understand the scope of this study, it was important to understand how the middle school concept fits into the project. This study examined the relationship between AO, ESS, and middle level concept within Michigan middle schools and these variables effect on student academic achievement. In this study, middle schools were divided into those having attained STW status and those who have not as a measure of middle school concept implementation, along with the school’s implementation of middle level strategies. Looking at the middle school concept and some of the research regarding its effectiveness should build an understanding of the current status.

Significance of the Study

The middle level concept has always focused on the development of the adolescent not just academically, but also physically, emotionally, and socially (NASSP, 2006; The National Forum to Accelerate Middle Grades Reform, n. d.; Jackson & Davis, 2000). Schaefer, Malu, and Yoon (2016) noted unfulfilled promise related to themes associated with practice, research, and policy in middle level education due to lack of involvement by teachers and researchers involved in setting the educational agenda and the need for policymakers to be better informed. Although the research base continues to grow, in the past two decades the movement itself has appeared in some ways to have stagnated, perhaps
due to government policies that emphasize test success. Perhaps the stagnation is symptomatic of years focused on high-stakes testing that left little room for other initiatives. If this is possible, the newer focus on the whole child may benefit the middle level concept through renewed interest in designing school programs to meet all the needs of students.

Krachman, LaRocca, and Gabrieli (2018) reported that the majority of educators who examined the 21st century needs of students believed that socio-emotional skills should be on the list, and that in addition to strong academic skills, it is essential to develop capabilities like resiliency, adaptability, collaboration, empathy, and social awareness. Further, research has found the development of these skills associated not only with higher academic success, but also success in the work place (Krachman et al., 2018).

An examination of socio-emotional programs implemented in schools showed mixed results; thus, careful, thoughtful implementation is necessary to meet student needs (Krachman et al., 2018). The present time offers opportunities for the years of research and experience in middle level strategies to flourish. As seen in middle level research, strong program implementation can strengthen student success even among the at-risk students (Felner et al., 1997; Picucci, Brownson, Kahlert, & Sobel, 2004; Flowers, Begum, Carpenter, & Mulhall, 2017). The National Forum’s STW criteria are established in four areas: academic excellence, developmentally responsive, social equity, and organizational structures and processes; these encompass the whole adolescent within the educational system.

Research has found that when a staff implements middle level structures at a high level, their efforts are successful, even when these structures differ from location to location (Felner et al., 1997). What makes one staff more ready or able to do this implementation?
Williamson and Johnston (1999) called for a localized approach to implementation of middle level concepts. Staff need to look at the purpose and function of strategies, not just pick from a list. Williamson and Johnston also noted that middle school educators have isolated themselves from elementary and high school colleagues and the researchers suggested collaboration across the K-12 continuum in the search for best practices (Williamson & Johnston, 1999).

Few studies of ESS and AO have been conducted in middle schools. Adding middle school research to the growing base of knowledge may be useful. Schools with strong ESS and AO that are successfully educating students could offer a method of identifying the fertile ground needed to implement middle level concepts. Discussion of this topic among K-12 educators may lead to recognition of structural and cultural similarities. Working to improve middle schools, staff could first identify their readiness through an examination of their ESS and AO and then collaborate to implement the best middle level strategies for their students’ needs. It is also possible, that middle level concept implementation leads to the establishment of high levels of ESS and AO within a school. Examining the relationship between these variables in light of student academic achievement may provide useful insights for educators and researchers.

**Research Questions**

Three key questions guided this study:

1. What is the level of AO, ESS, middle level strategy implementation, and academic achievement at each school?

2. Does the school’s implementation of middle level strategies and STW status affect the level of AO and ESS at a middle school?
3. Do the factors of AO, ESS, STW status, and middle level strategy implementation influence the academic achievement of students in math and reading?

These questions focus on evaluating the variables to determine the variables’ value at each school level. These school level values will be used to examine the interaction of these school level variables by comparing them across the schools in the study. This information may provide a view of what is occurring within the schools by understanding how the variables interact and impact on student achievement.

Terms and Definitions

*Academic achievement:* The academic attainment of the students in the school as measured by the state required assessment in mathematics and English language arts.

*Academic emphasis (AE):* The level at which teachers place importance on meeting the educational goals of all students.

*Academic optimism (AO):* The latent variable created from the factors of academic emphasis (AE), collective efficacy (CE), and faculty trust in parents and students (FT).

*Adolescence:* The transitional period between puberty and adulthood in human development, extending mainly over the teen years.

*Collective efficacy (CE):* A group's shared belief in its conjoint capabilities to organize and execute the courses of action required to produce given levels of attainments.

*Enabling school structures (ESS):* The bureaucracy of a school with a hierarchy that helps rather than hinders and a system of rules and regulations that guides problem-solving rather than punishes failure.
**English Language Arts (ELA):** The study in school of reading, writing, speaking, and listening, typically taught as a single subject in elementary and middle school.

**Faculty trust in parents and students (FT):** A willingness to be vulnerable to students and/or their parents based on the confidence that they are benevolent, reliable, competent, honest, and open.

**Middle level concept:** The pedagogical practices seen to specifically meet the needs of adolescents.

**Middle school:** A school with a structure that includes some combination of Grades 5 to 9.

**Schools to Watch (STW):** A program run by the National Forum to Accelerate Middle-Grades Reform (n. d.) that identifies schools across the United States that are well on their way to meeting the forum’s criteria for high performance.

**Socioeconomic status (SES):** The standing of a person or group in a community or society based on education, occupation, and income, often used as a benchmark for investigating inequalities. For this study, it is measured by the percentage of students who received free and reduced lunch.

**Social cognitive theory:** The belief that learning occurs in a social context with a dynamic and reciprocal interaction of the person, environment, and behavior.

**Limitations and Delimitations**

**Limitations.** A number of factors limits the usefulness of the research findings. If the schools that participate in the survey are not representative of middle schools in Michigan through matching demographics, the study is less applicable to other schools. A low return rate of teacher surveys could hamper the ability to draw conclusions accurately in regard to
the building as a whole. In this study, acquiring a sample of appropriate size was difficult, as use of structural equation modeling (SEM) required a minimum of 39 schools to fully respond, and there were currently 13 STW middle schools in Michigan. It would have been better if half of the responding schools were STW. Seeking data from STW schools beyond Michigan would have made comparisons with the academic achievement data more difficult as each state has its own achievement tests.

A large number of variables, many of which were not been included in this study, could contribute to the complexity of academic achievement, and this issue could lead to a faulty assumption of a causal relationship or correlation.

**Delimitations.** In this study, a choice was made to use each school’s average academic achievement across the grade levels on the state required test M-Step for the areas of mathematics, English language arts (ELA) and the average of the two subjects. As middle schools have different grade configurations, the average used a variety of grade levels. The middle schools were also of unequal sizes; thus, the sample size for academic achievement scores varied greatly, and the differences made the academic achievement scores less comparable than if these variables were equal for all schools.

Another choice made in the study was to compare middle schools having attained STW status and middle schools that have not attained this status. As not all middle schools go through the STW evaluation process, it was unknown whether the non-STW schools used middle school structures like the STW schools. This delimitation could have made the data regarding relations less reliable when examining this variable.
Conclusion

Even with the limitations, assumptions, and delimitations, the proposed research was able to find relationships between the variables being examined. The research questions addressed the level of AO, ESS, and academic achievement in Michigan middle schools with regard to the socioeconomic status of their students. The study also examined these variables in relation to the middle schools’ STW status as a measure of middle level concept implementation as well as a school’s use of middle level strategies. The information attained can be a springboard for future research in the structure of middle schools and its effect on student academic achievement.

Summary

This study examined the relationship between the implementation of middle level strategies with the cultural and structural variables of AO and ESS, which have been found to have a positive effective on students’ academic achievement regardless of socioeconomic status. The interaction of these variables was explored in Michigan middle schools with the schools’ implementation of middle level strategies to provide an understanding of the effectiveness of these strategies in meeting adolescent academic needs.

Bandura’s social cognitive theory (1986), with its triad of personal, behavioral, and environmental factors, provided the framework to examine the interaction of these school level variables. The personal factors examined were measured by the AO survey, a latent variable formed by academic emphasis, collective efficacy, and faculty trust in parents and students (Hoy et al., 2006). Personal factors also included the ESS survey, which examines the flexibility within the bureaucratic system of the school (Hoy & Sweetland, 2001). The behavior within the school was represented by the middle school’s implementation of middle
level concept and the academic achievement scores of the students. The environmental influences were examined through the socioeconomic status of the students, the location of the school, its size, and demographics.

There appears to be a similarity between AO and ESS with some of the main tenets of middle level theory, and connections have been found between the implementation of middle level strategies and student achievement but little research is extant in this area. Research conducted into the variables of AO and ESS at elementary and high school levels have been found to be factors in academic achievement. The literature review for this study is built upon previous research findings into these variables.
Chapter 2: Review of Literature

Middle School Theory

Adolescence. Ask any adult if they would willingly return to being a teenager and the mostly likely answer would be a resounding and emphatic “no.” On further inquiry about their middle school years, they will often describe those years as the most difficult. We accept adolescence as a separate period of life; however, this has not always been true. Adolescence is generally defined as a period of transition bridging childhood and adulthood (Dubas, Miller, & Peterson, 2003).

The concept of adolescence emerged in America at the waning of the 19th century largely due to the work of psychologist G. Stanley Hall (1904) and societal factors, such as compulsory education, child labor laws, and the founding of a juvenile justice system (Bakan, 1971). In this time of social and economic upheavals, the railroads connected the coasts, the frontier was eliminated, and the cities grew. The new post-Civil War urban-industrial society emerged seeking to establish everyone’s roles within it (Bakan, 1971). Hall (1904), cited by Mintz (2004), convinced people that kids were growing up too fast and that childhood should be prolonged, guided by specialized institutions designed to meet their specific needs. In that era, a growing body of knowledge about emotional, physical, and sexual development brought forth a new understanding of children. This new knowledge shifted society’s view of children resulting in two major changes: the introduction of scientific-based childrearing guidance and the concept of adolescence. These two ideas set the stage for constructing the institutions and societal treatment of children that exist in the U.S today (Mintz, 2004).
For more than 100 years, the U.S. educational community has promoted a specialized educational structure for young adolescents from 11 to 14 years of age (Dubas et al., 2003). The movement for junior high schools began at the turn of the 20th century and evolved into the middle level concept of today. Schaefer et al. (2016) noted that William Alexander proposed the title of middle school at the Conference for School Administrators in 1963. Alexander et al. (1969) defined middle school as “a phase and program of schooling bridging but differing from the childhood and adolescent phases and programs” (p. 5). The mission was to provide an education appropriate for these in-between children through a more individualized curriculum, exploratory opportunities, and supporting the students’ personal development needs (Alexander et al., 1969).

Educators in the emergent middle school movement in the 1970s worked toward a specific definition of a middle school (Schaefer et al., 2016). This new concept was based on scientific research that increased the understanding of adolescent development and needs (Alexander et al., 1969). Schools and the educators within them were digesting, assessing, and learning these new concepts about their practice; thus, the middle school movement was born.

The middle school concept has grown in sophistication and the understanding that this is a whole school, whole staff philosophy with many interdependent parts. The vision is that middle schools across the U.S. would embed these principles as the driving forces within their buildings for the single goal of meeting the learning needs of young adolescents (Erb, 2005; Lipsitz, 1984).

Basic principles with flexibility to accommodate all settings are needed for this to occur across a wide variety of middle level constructs encompassing far-ranging sizes and
demographics (Erb, 2005). It could be useful to find evaluative measures that give middle schools feedback about their current structures and also potentially provide direction for improvement with middle level practices. Middle schools cannot rely upon the sole discretion of the administrator to manage these best practices, as administrative turnover can be high. The impetus and structures for these practices would be better found within the culture and climate of the building.

Children at the middle level experience incredible physical changes during early adolescence; this is the most rapid growth humans experience after the birth to two years period (Caskey & Anfara, 2014). This rapid physical growth coincides with the onset of puberty and its increase in hormonal changes and change and growth experienced in the brain. All of these physical changes affect young adolescents' emotional, psychological, and social development according to Caskey and Anfara (2014), “Young adolescents, particularly European-American youth, are often physically vulnerable due to improper nutrition, poor physical fitness, and health habits as well as high-risk behaviors such as alcohol or drug use and sexual activity” (p. 2). These risky behaviors make young adolescence a particularly vulnerable time; appropriate support and guidance can promote a positive outcome.

In addition to physical changes, young adolescents experience intellectual growth as their abstract reasoning capacity begins to be established. They also develop morally and begin to question people’s actions. Many of the attitudes, beliefs, and values of adults are established at this time (Caskey & Anfara, 2014). Psychologically, young adolescents are searching for their identity, exploring various roles as they seek their individual uniqueness (Caskey & Anfara, 2014). Socio-emotional shifts also occur. The importance of peers is elevated whereas influence of adults is decreased creating tension between friends and family
groups (Caskey & Anfara, 2014). The difficulty of meeting young adolescent needs is further compounded as students are encountered at different points in the developmental continuum (Alexander et al., 1969).

**Addressing adolescent needs in schools.** Over the years, schools have contemplated how to adequately address the needs of middle level students. The first junior high schools in the early 20th century included electives, foreign language instruction, different instructional methods, and departmentalized teaching (Lounsbury, 1984). Before this time, four of five students attended schools with grade levels organized in an 8 to 4 pattern (George & Alexander, 1993). The newly formed junior high schools were a clear extension downward of the high school methods and structure. No specific training program for junior high teachers was created (Lounsbury, 1984).

The junior high format caught on, and by 1960 four of five students attended schools with grade levels organized in a 6-3-3 pattern (George & Alexander, 1993). In the 1960s, as the junior high concept was questioned, a movement emerged in education that sought to change how young adolescents were taught. Educators saw the need for better transitions, the development of one-to-one relationships, and exploratory programs (Lounsbury, 1984; Eichhorn, 1966).

**Middle School Concept**

The emerging middle school concept was defined as “a school providing a program planned for a range of older children, preadolescents, and early adolescents that builds upon the elementary school program for earlier childhood and in turn is built upon by the high school’s program for adolescence” (Alexander et al., 1969, p. 5). Middle school was seen as an important transitional time for young adolescents as they grew from children into later
adolescence. Those promoting the new junior high concept believed it necessary to have subject-specialized teachers working in teams to meet the students’ academic and social needs. Individualized education was needed to address each child’s own particular developmental stage. Educators believed that students should be exposed to a wide variety of courses and that teachers should be eager and willing to teach these young adolescents (Alexander et al., 1969).

Thirty years later, the definition of the middle school had not shifted far from its origins, “a school of some three to five years between the elementary and high school focused on the educational needs of students in these in-between years and designed to promote continuous educational progress for all concerned” (George & Alexander, 1993, p. 44). The characteristics of these schools had expanded to include advisory programs, interdisciplinary teams, exploratory courses, flexible scheduling, active instruction, specially trained teachers, shared decision-making among teachers, physical and health education, and good connections with parents (George & Alexander, 1993). The overarching purpose of the middle school remained the same but the vision of how to achieve it had become more refined and defined.

Experts in the field have written extensively about the more refined aspects associated with recommended middle level practice. Rigorous academics are seen as necessary to keep students engaged and prepared for the high school (Erb, 2005). Teaching arrangements need to be created to support student needs, the size of the teacher team and grade levels are not as important as their functional purpose (National Association of Secondary School Principals, 2006). Flexible schedules allow teaching teams to use the time to best meet educational objectives. It is important to ensure that each student has a positive relationship with an adult
in the building (Erb, 2005). Students should be able to be involved in leadership experience (Jackson & Davis, 2000). Adolescents need exploration, and there should be a wide variety of opportunities through classes, clubs, sports, and so on (Erb, 2005). Finally, the teaching staff needs to be fully versed in understanding the development and needs of young adolescents and how to address them appropriately (Eichhorn, 1966; Lounsbury, 1984; George & Alexander, 1993; National Association of Secondary School Principals, 2006). This view encompasses the whole child.

*This We Believe*, the position paper from the Association for Middle Level Education, (Erb, 2005), pointed out the importance of implementing a multitude of middle level best practices; it is not just picking from a menu. Erb (2005) stated, “Flexible structures and a shared vision are important, but without a challenging curriculum, varied learning approaches, and programs for health and wellness, the middle grades school will function with diminished capacity” (p. 3). It is not enough to have teachers arranged into teams; they must successfully collaborate to develop the climate, lessons, and emotional connections the students need (Erb, 2005; National Association of Secondary School Principals, 2006; Peterson, McCarthey, & Elmore, 1996; Jackson & Davis, 2000).

On paper, schools may demonstrate a rigorous curriculum, but are all students in the school actually held and helped to these higher levels? Teachers may have common planning, but is it used effectively? A homeroom labeled as advisory does not mean the students are getting the time spent on exploring important ideas together under the guidance of an educator. Implementing middle level theory is more than just listing the teachers who are assigned to a team, or setting aside time for an advisory program; it is about the deep implementation of the whole set of principles. These principles encompass the school
socially, emotionally, and academically. Changes to the use of time or the arrangement of hours alone will not positively affect students; improved outcomes for students are brought about through a heightened sense of efficacy and membership (Williamson, 1996).

In a literature review of the middle school movement, Schaefer et al. (2016) noted that as the century turned, the 2000s became a time to focus on research. The middle level movement developed a blueprint for excellence with studies showing that when the school embraced all elements of middle level practice, progress was shown in student achievement scores (Schaefer et al., 2016). Examining a few of the major studies that emerged during this time clarified the research basis for this study.

In 1986, the Carnegie Corporation of New York established the Carnegie Council of Adolescent Development that produced in 1989 the groundbreaking report, *Turning Points: Preparing American Youth for the 21st Century* (Jackson & Davis, 2000). Ten years later, another report, *Turning Points 2000: Educating Adolescents in the 21st Century* examined the work and progress of the previous decade (Jackson & Davis, 2000). *Turning Points 2000* examined a number of studies and found that although progress had been made in growing middle level practice, many schools did not implement these practices, especially in poor urban and rural schools (Jackson & Davis, 2000).

Other studies showed that when middle level practices were implemented fully and well, student achievement rose (Jackson & Davis, 2000; Schaefer et al., 2016). *Turning Points 2000*’s reflective examination of a decade of middle level work produced seven recommendations (Jackson & Davis, 2000):
• Teach a curriculum grounded in rigorous, public academic standards for what students should know and be able to do, relevant to the concerns of adolescents and based on how students learn best.

• Use instructional methods designed to prepare all students to achieve higher standards and become lifelong learners.

• Staff middle level schools with teachers who are expert at teaching young adolescents, and engage teachers in ongoing, targeted professional development opportunities.

• Organize relationships for learning to create a climate of intellectual development and a caring community of shared educational purpose.

• Govern democratically through direct or representative participation by all school staff members, the adults who know the students best.

• Provide a safe and healthy school environment as part of improving academic performance and developing caring and ethical citizens.

• Involve parents and communities in supporting student learning and healthy development. (pp. 25-26)

These recommendations were ordered by their priority to move middle level education forward and meet the needs of the students (Jackson & Davis, 2000). The structural and cultural variables in this study were chosen to connect to these recommendations. Academic optimism (AO) emphasizes academics, parent/student connections, and a collaborative belief in student success. Enabling school structures (ESS) support a school that has a more democratic approach.
In 2006, the National Association of Secondary School Principals (NASSP, 2006) published *Breaking Ranks in the Middle: Strategies for Leading Middle Level Reform*. Nine recommendations align with those from *Turning Points 2000*, as well as 16 characteristics from the Association for Middle Level Education’s *This We Believe*, and the National Forum to Accelerate Middle Level Reform’s STW rubric (see Appendix A; NASSP, 2006). These volumes were produced in reaction to criticisms that the middle level concept had failed students (NASSP, 2006; Schaefer et al., 2016). These responses brought together the work of middle level educators and researchers to provide a guide for middle schools as they strove to meet student needs. The beginning of the 21st century was a difficult time for middle level educators as they faced the pressure to improve middle schools experiences for students, implement common core, and meet the requirements of No Child Left Behind (NCLB, 2001; Schaefer et al., 2016).

A wide array of research studies have been conducted in the past 20 years regarding the middle level concept. Some studies have examined implementation of middle level concept, and others have chosen to focus on one or another aspect of middle level educational recommendations. Just a few of the studies regarding implementation of the middle level concept and their findings are discussed in this study.

In 1993-1994, the Middle Start program was begun in Michigan to address issues affecting adolescents in poverty (Austin, 1997). This longitudinal study collected self-study information from approximately one-third of Michigan middle schools at the beginning and the end of a 3-year period (Austin, 1997). The report revealed that Michigan’s middle grades students were losing ground because schools had insufficient resources to support student needs (Austin, 1997). It is doubtful that this situation has improved in Michigan during the
intervening 20 years. A report on the fiscal distress of Michigan’s schools found that since 2002 the real per pupil funding has declined sharply (Arsen, DeLuca, Ni, & Bates, 2015). It is likely that with even less financial support, Michigan middle schools have continued to struggle to meet their students needs.

Another longitudinal study examined middle schools in Illinois that worked to implement middle level concept based on the Turning Points original recommendaions. The Project on High Performance Learning Communities collected data on more than 97 schools from 1991 to 1997, encompassing more than 15,000 students and nearly 900 teachers (Felner et al., 1997). The report focused on determining the level of implementation of middle level reform as an important variable in the study. The researchers found that schools with the highest level of implementation reported the highest student achievement scores in math, language arts, and reading (Felner et al., 1997). These schools also had the least behavior problems, students reported the best emotional adjustment, and students showed marked academic growth as their level of implementation increased (Felner et al., 1997). An important finding showed that only when a school attained a high level of implementation were they able to prevent much of the academic slide that often happens to at-risk students during adolescence (Felner et al., 1997).

Picucci et al. (2004) reported that the Charles A. Dana Center’s study team visited seven high-performing, high-poverty middle schools that had implemented elements of the middle school concept in a qualitative study to understand how these schools improved student performance. These schools had demonstrated a strong growth rate for at least three years on the state standardized tests in mathematics and reading and had at least a 50% free and reduced lunch rate (Picucci et al., 2004). The researchers found that these schools
focused on high academic standards, had a focus on equity, and all had some common school structures including localized student teams, common planning time, and block scheduling (Picucci et al., 2004). The schools also worked to build capacity in the system through professional development and maintaining a strong infrastructure (Picucci et al., 2004). The researchers concluded that the most important factor of successful schools was not whether they fully implemented all the middle level concepts but rather how they intentionally collaborated to implement the strategies most useful to the progress of their students (Picucci et al., 2004).

A study examining the benefits of various grade configurations for middle level students used a data set from New York Public Schools that contained the enrollment, achievement, and demographics for students from Grades 3 to 8 from 1998-2008, allowing them to “follow” the students’ progress through the grade levels (Rockoff & Lockwood, 2010). The researchers questioned the benefit of moving students to middle schools at all, as they found that students who moved to a middle school versus remaining in a K-8 construct had significant drops in academic achievement (Rockoff & Lockwood, 2010). The data showed a large effect (about 0.15 standard deviations) present for both math and English that continued through Grade 8 (Rockoff & Lockwood, 2010). The effects were larger for students with low levels of initial achievement; thus, the lowest achieving lost more academic ground (Rockoff & Lockwood, 2010). The study did not examine the use of middle level concepts at these schools, but the findings raise interesting questions about why the achievement was strikingly different between the various configurations. Are there structural or climate elements more likely to be found in a K-8 school that benefit student achievement?
Studies previous to Rockoff and Lockwood (2010) found connections between well-implemented middle level strategies and increased student achievement. In discussing effective middle school structures, Williamson (1996) noted, “The value of such structures lies not in their characteristics but in the conditions that result when teachers and students engage in thoughtful, collaborative work. The relationship resulting from these efforts have a positive impact on teacher efficacy and student sense of membership” (p. 4). This study strives to examine these conditions in the school by comparing the level of AO and ESS at middle schools that have measurably implemented middle level concepts with middle schools that have not. This study looks to examine the relationship of these supporting structures to middle level concepts. The middle level concept implementation would be determined by whether schools have attained STW status or not and/or the middle school strategies they have implemented.

**Schools to Watch (STW) Initiative**

The National Forum to Accelerate Middle-Grades Reform (n. d.) envisioned high-performing middle schools as academically excellent, developmentally responsible, and socially equitable, and in 2002 piloted the STW state program, which has since grown to 17 states. This was done in collaboration with Association for Middle Level Education, National Association of Elementary School Principals, National Association of Secondary School Principals, and Learning Forward. The National Forum to Accelerate Middle-Grades Reform (n.d.) has developed criteria for identifying high-performing middle-grades schools, and created tools to help schools use the criteria. Schools that manage to implement these best middle level practices work purposefully and collaboratively. Their work in the four categories is evaluated with the STW rubric and through a site visit. Middle schools that
sufficiently meet the criteria to be a STW go through a re-designation evaluation every four years (National Forum to Accelerate Middle-Grades Reform, n.d.).

Williamson and Johnston (1998) warned of the risks of creating middle schools from a checklist of options rather than fitting the program to the student needs at each individual school. They argued that the work of creating a student supportive school must be done collaboratively with parents, educators, and community members (Williamson & Johnston, 1998). For this to occur, trust must exist between these stakeholder groups. Teacher trust in parents and students is one of the factors in academic optimism. This inward examination needs to be done by the educators at their own buildings and will allow for the creation of innovative student-centered programs (Williamson & Johnston, 1998). If educators put forth the effort to evaluate and create, they must first believe in their collective efficacy, also a factor in academic optimism, and have an enabling school structure, which will allow them to act. The STW program asks middle level educators to deeply evaluate their schools and build programs to address their students’ needs. The process is a collaborative one.

Peterson et al. (1996) concluded that before instruction is affected, teachers must become a part of a community of learners who share a common vision of what could be for students and are continuously seeking to develop new skills and understandings to bring that vision to life. Thus, the structure of the school, its belief system, and collective ability to create change is important for achieving high-level implementation. Governance in exemplary middle schools is a careful balance between spirited leadership and broad empowerment of all stakeholders (George & Alexander, 1993). Most often, a governing council of some sort, where teams have representatives who work with the school administration, is the vehicle. Shared decision-making has been occurring in exemplary
middle schools for decades (George & Alexander, 1993). For middle schools to meet these expectations, they need to have the right bureaucratic structures in place along with the necessary belief systems and culture to support these adolescent-focused strategies. Hopson and Lee (2011) found that a positive school climate had a mitigating effect on academic achievement of students in poverty. Adolescence is a difficult time and providing the best climate and culture to assist student learning at this point in their development is worthy work.

Flowers et al. (2017) reported that the School Transformation Network Project was designed to improve the practices of 18 low-performing middle schools in California, Illinois, and North Carolina. The project focused on whole school reform guided by the National Forum’s School to Watch (STW) criteria. (The participating schools received support through National Forum in a number of ways as they strove to reform their schools, the program was funded through a U.S. Department of Education Investing in Innovation (i3) development grant (Flowers et al., 2017).

The STW rubric evaluation, a survey, and student achievement data were collected for each of the three years of the project. The researchers found that the schools grew significantly in their implementation of middle level concepts, and the three project schools with the highest implementation level also showed significant gains in mathematics though not in ELA (Flowers et al., 2017). In examining the effective practices at the three highest achieving project schools, the study found the schools had an improvement mindset at the beginning and simply needed guidance in strategy choices (Flowers et al., 2017). The importance of the principal was also noted as a strong curricular leader, who trusted the teachers, shared leadership, and allowed teachers to innovate for student success (Flowers et
al., 2017). The importance of strong coaching through the process was also identified as a key factor (Flowers et al., 2017). Understanding the readiness, structural, and culture factors allowed some of the project schools to move forward quickly successfully provides guidance for other middle schools looking for improvement assistance.

**Organizational Theory**

**Social cognitive theory.** In explaining the importance of cognitive factors in understanding human agency, Bandura (2001) stated,

> Cognitive factors do quite well in predicting human behavior and guiding effective interventions. To make their way successfully through a complex world full of challenges and hazards, people have to make good judgments about their capabilities, anticipate the probable effects of different events and courses of action, size of sociostructural opportunities and constraints and regulate their behavior accordingly. (p. 3)

Bandura (2001) continued to explain how human agency is the drive to take action for a specific purpose and self-efficacy is the belief that a person has some control over his or her own functioning. Social cognitive theory also encompasses the idea of collective efficacy, the concept that people can believe in their collective ability to reach specific goals (Bandura, 2001). Building upon Bandura’s concept of collective beliefs, for this study, social cognitive theory was applied at individual schools. Organizational social cognitive theory examined the interaction of personal or internal factors, environmental factors, and behavior or outcomes of the school as an entity.

In the study of schools, collective efficacy has been shown to have a positive impact on students’ academic achievement regardless of SES (Hoy, Sweetland, & Smith, 2002).
Examining the role collective efficacy plays in schools is important along with other belief factors. Bandura (2001) believed that how efficacy beliefs are developed, their purposes, and the socio-structural arrangements will shape how deeply embedded they are in a culture. Building on Bandura’s theories, Hoy et al. (2002) and others developed survey instruments to measure these beliefs within schools. Middle level concepts need to be deeply embedded within the school culture to truly be expressed for the benefit of the adolescents within. By examining the environmental factors, the cultural beliefs of the school, and the outcomes of academic achievement and implementation of middle level concepts through Bandura’s (2001) theory provided insight into the functioning of Michigan middle schools.

**Academic optimism (AO).** A variable in the proposed research is academic optimism (AO), which included collective efficacy as one factor in its construct. This variable will represent some of the personal or internal factors, in the triadic reciprocity of Bandura’s (1986) social cognitive theory. The internal factors examined will be the collective beliefs of the teachers within the school as measured by the AO survey (see Appendix B), a latent variable formed by academic emphasis, collective efficacy, and faculty trust in parents and students (Hoy et al., 2006). The following will examine AO through its conceptual framework, practical application, relationship to the other variables, and the planned measurement instrument.

Hoy et al. (2006) examined organizational properties that make a difference in student achievement even when controlling for socioeconomic factors. These factors are academic emphasis, collective efficacy, and faculty trust in parents and students. They found these factors are closely connected, reinforcing each other positively creating the latent factor: AO (Hoy et al., 2006). Several other studies confirmed the latent variable of AO (Wu
et al., 2013; Mitchell, Mendiola, Schumacker, & Lowery, 2016). Socioeconomic factors have been shown to be powerful predictors of student achievement in schools (Hopson & Lee, 2011). In general, poverty level is a fairly accurate predictor of test scores. This can be frustrating for the hard-working passionate educators striving for all children to succeed. The identification of factors that are within the control of the school allows school staff to focus, develop, and strengthen these concepts within their buildings to support student academic achievement.

**Academic emphasis.** The first of three measures in AO is academic emphasis. As defined by Hoy et al. (2006), academic emphasis is “the extent to which a school is driven by a quest for academic excellence” (p. 434). Lee and Bryk’s (1989) work presented early research on the importance of factors such as academic emphasis on student achievement. It has also been demonstrated that academic emphasis is positively and directly related to student achievement when controlling for SES (Hoy et al, 2006).

Middle level educators believe in the need to provide rigorous academics for students (Erb, 2005; Jackson & Davis, 2000). In *Turning Points 2000*, the authors discuss the need for equity and excellence through setting and holding all middle level learners to high academic standards (Jackson & Davis, 2000). A qualitative look at high-poverty, high-achieving middle schools found shared similar structures at each building. These similar structures included a focus on excellence and equity for all students in academics (Picucci et al., 2004). The Center for Prevention Research and Development have also found the need for academic emphasis for middle school students to achieve (Carpenter, Flowers, Mertens, & Mulhall, 2004; Mulhall, Flowers, & Mertens, 2002). One of the four areas of focus in the
STW program is academic excellence (National Forum to Accelerate Middle-Grades Reform, n.d.).

**Collective efficacy.** The second measure in AO, collective efficacy, draws directly on the work of Bandura’s (1986) social cognitive theory. Bandura (2001) discussed how collective performance involves “transactional dynamics,” which creates a perceived collective efficacy, a group property that is more than simply the sum of the individual beliefs (p. 14). Hoy et al. (2006) noted that it is “the judgment of teachers that the faculty as a whole can organize and execute the actions required to have positive effects on students” (p. 428). Collective efficacy has been found to be an important factor in explaining student achievement more than SES or academic emphasis (Hoy et al., 2002).

The teaming model promoted by middle level theory works well, if the teams function effectively as a whole (NASSP, 2006; Jackson, et al., 2000; Erb, 2005). Effective middle schools have been shown to have a strong sense of mission shared by everyone (Jackson & Davis, 2000). A team or staff possessing strong collective efficacy will believe in their ability to meet the needs of adolescent collaboratively. The stronger a group’s belief in their collective efficacy, the stronger their motivation, their morale, and the longer they will persist leading to greater performance (Bandura, 2001). The School Self-Study and Rating rubric from the National Forum determines the overall rating for each indicator of the four areas indicating a belief in the value of the collective view (National Forum to Accelerate Middle-Grades Reform, n.d.).

**Faculty trust in parents and students.** The third measure in AO, faculty trust in parents and students, is “a willingness to be vulnerable to another party based on the confidence that that party is benevolent, reliable, competent, honest, and open” (Hoy et al.,
This emerged as an important concept in Coleman’s analysis of social interaction, as cited by Hoy et al. (2006). Goddard, Tschannen-Moran and Hoy (2001) showed a direct connection between faculty trust and academic achievement. Strong connections with students and their families are also a part of the beliefs put forth by advocates for middle level strategies. Developing strong relationships with students and advocating for their needs is at the heart of being a middle educator (Erb, 2005). Maintaining strong parental involvement throughout the middle years of schooling is seen as essential for student success (Jackson & Davis, 2000; Mulhall et al., 2002). Three of the four areas of the STW rubric, developmentally responsive, social equity, and organizational structures and processes emphasize parental involvement, student voice, building relationships, and opportunities for involvement (National Forum to Accelerate Middle-Grades Reform, n.d.).

The three properties, academic emphasis, collective efficacy, and faculty trust in parents and students work together in forming AO (Hoy et al., 2006). Collective efficacy represents the cognitive aspect, faculty trust the affective and emotional side, and academic emphasis the behavioral part of the latent construct (Hoy et al., 2006). Several research studies that used the school academic optimism scale survey instrument verified the latent construct of AO, including research in both the U. S. and Taiwan (Hoy et al., 2006; Wu et al., 2013; Mitchell et al., 2016). In this study, the researcher measured the school level of AO using the same survey.

Many studies involved AO as a variable in examining the relationship of various factors within school culture. These studies examined AO as a school-wide factor, an individual teacher factor, or a factor in student perspective. In this study, AO was used as a school-level variable involving a perceived collective belief. In discussing the research
involving AO, the focus was on studies that also examined it as an internal school-level variable.

**Measuring academic optimism.** The construct of AO was developed through a study conducted by Hoy et al. (2006). This study examined the relationship of three organizational properties that seemed to make a difference in academic achievement even after controlling for (SES): academic emphasis, collective efficacy, and faculty trust in parents and students (Hoy et al., 2006). This study measured these three factors using valid and reliable measures from previous research: Academic emphasis was measured using a subscale of the Organizational Health Inventory; collective efficacy was measured with a short version of the Collective Efficacy Scale; and faculty trust was measured using the Omnibus Trust Scale (Hoy et al., 2006). The data were collected from 96 diverse high schools from urban, suburban, and rural areas in a midwestern state. A random selection of teachers within each school completed the surveys. The results showed that the measures of academic emphasis, collective efficacy, and faculty trust work together to create the construct of AO (Hoy et al., 2006). For use in this study, the reliability of the AO scale to have an alpha coefficient of .83 (Hoy et al., 2006). Hoy et al. (2006) viewed AO as a strong explanation for how schools can enhance student achievement, as it draws together three streams of research. Collective efficacy comes from Bandura’s (1986) social cognitive theory; trust is an important factor in Coleman’s work, as cited by Hoy et al. (2006); and academic emphasis arises from Hoy and colleagues (2006) research on organizational health. Although previous research occurred with high schools, Hoy et al., (2006) believed that the findings were also applicable to elementary and middle schools, as the three variables in the latent construct have all been found to have a positive effect in those levels.
A study of 99 poor urban elementary schools in Texas, with free and reduced lunch rates between 55 to 92%, was conducted to confirm the construct of AO and to gain an understanding of its connection to student achievement in mathematics (Smith & Hoy, 2007). The faculty at the schools participated in the survey. The survey was the same instrument used in the previously discussed study, combining the factors of academic emphasis, collective efficacy, and faculty trust (Smith & Hoy, 2007). School achievement and demographic data were collected from the Texas Education Agency. The latent variable AO was found to be one factor that explained 89.93 of the variance (Smith & Hoy, 2007). Regarding academic achievement, AO was found to be just as important as SES in explaining mathematic achievement; both have a beta weight of -.34 with a p value less than .01 (Smith & Hoy, 2007). The researchers believed that this was an important finding as schools have more influence over the AO than the socioeconomic aspects of the community (Smith & Hoy, 2007).

Bevel and Mitchell (2012) examined 29 elementary schools in Alabama for the relationship between AO and reading achievement. An emailed survey link to the School Academic Optimism scale was completed by 396 teachers, the same scale used in the previously discussed studies. The reading achievement was measured by the fifth grade scores of a state criterion referenced test (Bevel & Mitchell, 2012). This study also confirmed that AO is a latent construct of academic emphasis, collective efficacy, and faculty trust (Bevel & Mitchell, 2012). The research also demonstrated that AO was positively correlated with and predictive of reading achievement as it explained 18% of the variance beyond SES (Bevel & Mitchell, 2012).
Boonen, Pinxten, Van Damme, and Onghena’s (2014) study in Flanders examined the relationship of AO with fifth-graders’ academic achievement in mathematics and reading. This study examined AO survey data from 1,375 staff members and 3,538 students’ achievement data from 117 schools. The researchers found that AO loaded stronger at the school level (.92) than at the teacher level (.84; Boonen et al., 2014). They found AO as a latent construct, which is aligned with previous research, and discovered that schools with high AO had higher achievement in both mathematics and reading (Boonen et al., 2014). Findings about AO, SES, and achievement were not clearly in line with previous research, as analysis of data did not show that AO overcame the effects of SES at the school level (Boonen et al., 2014).

Hong (2017) conducted a study in Taiwan of the relationship between school AO, teacher AO, teacher professional commitment, and the principal transformational leadership. In the research, 367 teachers from 22 high schools completed four scales, one for each of the variables in the study (Hong, 2017). Hong used the AO survey developed by Hoy et al. (2006) and found it to have an alpha coefficient of .8735. Findings showed that school AO has a strong influence on teachers’ academic optimism and that principals’ transformative leadership had a positive predictive effect upon these forms of AO and the teachers’ commitment (Hong, 2017).

The research discussed in the literature review of this study all confirmed the latent variable of AO formed by the constructs of academic emphasis, collective efficacy, and faculty trust. All found AO had a positive effect on the school through higher student achievement often in spite of SES (Smith & Hoy, 2007; Bevel & Mitchell, 2012; Boonen et al., 2014) or upon the beliefs of the teachers (Hong, 2017). All of the studies discussed were
conducted at either the elementary or high school level, leaving work to be done in middle schools.

**Enabling school structures (ESS).** In Bandura’s (1986) social cognitive theory, enabling school structure (ESS) is an internal factor as the bureaucratic structure of the school. Hoy and Sweetland (2001) defined ESS as the bureaucracy of a school with a hierarchy that helps rather than hinders and a system of rules and regulations that guides problem solving rather than punishes failure. The following section discusses ESS through its conceptual framework, practical application, relationship to the other variables, and the measurement instrument employed in this study.

The extent of an organization’s written rules, regulations, procedures, and policies is its level of formalization (Hoy, 2003). Adler and Borys (1996) identified two types of formalization in bureaucracies, enabling and coercive, which recognize the difference between employees finding an organization that allows them to perform their tasks better as positive or in contrast have a negative experience with an organization that is alienating. An enabling structure is not focused on making work processes foolproof through the use of formal procedures, but instead allows employees to deal effectively with issues that arise during their work processes (Adler & Borys, 1996). This enabling approach provides employees “with a wide range of contextual information designed to help them interact creatively with the broader organization and environment” (Adler & Borys, 1996, p. 73), in contrast to the coercive approach where roles are partitioned and management retains full control of decisions (Adler & Borys, 1996). An enabling bureaucracy would focus on reducing the difference in power, knowledge, skills, and rewards between managers and subordinates (Adler & Borys, 1996). A reduction in differences between managers and
subordinates helps people be more effective and committed in their roles within the organization (Adler & Borys, 1996).

Aiken and Hage (1968) defined the centralization of authority as the locus of control for organizational decision-making, the degree to which employees participate in decision-making. High centralization is the classic bureaucratic structure, where authority flows down from the top (Hoy, 2003). Hindering centralization is a structure that interferes with employees’ ability to solve problems to do their work, while enabling centralization assists them to solve problems (Hoy, 2003). When combined, the elements of centralization and formalization create the foundation of ESS.

Hoy and Sweetland (2001) examined the idea of enabling versus coercive bureaucracies within the school structure, looking at the school’s degree of formalization, centralization, and their contexts. In studies of K-12 schools, they found that schools fell along a continuum from hindering to enabling bureaucracy (Hoy & Sweetland, 2001). Hoy and Sweetland (2001) saw structure in schools as inevitable; a hindering school structure is when the bureaucracy gets in the way of progress, whereas an enabling structure allows people to solve issues. The researchers theorized that enabling bureaucracy would promote a sense of trust that would lead to an effectively functioning climate at the school (Hoy & Sweetland, 2001).

Bureaucracies are not inherently poor models of organization; it is the type of bureaucracies in place that makes a school more or less effective. Hoy (2002) described an ESS as the rules, regulations, and hierarchy of authority that allow principals and teachers to work cooperatively while keeping their distinctive roles. In these ESS, the focus would be on
success rather than control. This internal organization of the school is influenced by external or environmental factors while also influencing the behaviors or outcomes of the school.

**Research on ESS.** In 1997, Hoy and Hannum (1997) examined the health of middle school climate in 86 schools using the Organizational Health inventory. The aspects of organizational health were examined for their effect on student achievement. The findings showed that although SES was a strong predictor of student achievement, certain aspects of organization health, such as teacher affiliation, resource support, academic emphasis, and institutional integrity, also made significant contributions (Hoy & Hannum, 1997). These findings were consistent with similar research conducted in high schools. Hoy and Hannum concluded that the following characteristics of schools need to be monitored: internal and community emphasis on academic achievement, commitment of teachers, and resource support. This conclusion set the stage for further examination of school climate and structure.

Hoy and Sweetland (2001) developed a survey instrument for measuring ESS based upon the findings of several preliminary studies. Hoy and Sweetland discussed how earlier studies in measuring formalization and centralization in school structures led to the creation of a measure of enabling bureaucracy. From the 24 questions on this earlier research’s instrument, Hoy and Sweetland drew upon the 12 strongest survey items to create a measure of ESS that would be shorter in length and able to be used with multiple staff members to determine the level of enabling bureaucracy.

Hoy and Sweetland’s (2001) new instrument was used with positive results in 97 high schools in Ohio, where high reliability was never lower than .9 and was found to have a high validity with the previous longer measurement of formalization and centralization. The researcher found that enabling structure is a unitary construct that could be measured reliably
and validly with their 12-item Likert-type scale (see Appendix C; Hoy & Sweetland, 2001). A key element in ESS is trust between teachers and between teachers and administrators (Hoy & Sweetland, 2001). ESS encourage cooperation, flexibility, problem-solving, and broad professional autonomy (Hoy & Sweetland, 2001). This underlying structure creates a solid foundation upon which teachers can act in the best interest of students through the ability to solve issues and create organizational knowledge. The teaming and decision-making models recommended in the literature on middle level best practices are reflective of these same principles (Erb, 2005).

Hoy and Sweetland’s (2001) work continued with research into correlating enabling bureaucracies to faculty trust, truth spinning, and role conflict. Findings indicated that the more enabling the bureaucracy, the greater amount of faculty trust, the less truth spinning, and the less role conflict (Hoy & Sweetland, 2001). The researchers concluded that, “enabling school structures are important to the development of effective learning organizations” and see an important area of future research in the “conditions that are necessary to facilitate the emergence of enabling school structures” (Hoy & Sweetland, 2001, p. 317).

In a qualitative study of high schools that rated highly on the survey of ESS, Sinden, Hoy, and Sweetland (2004) found that principals who trusted in the teachers’ professionalism were flexible and used more informal modes of communication. Williamson and Johnston (1999) argued that middle schools should not follow a set checklist of practices, but instead implement those that will meet the needs of their students. They contended that the staff needs the ability to design middle school programs specific to the “real and localized needs” of their students (Williamson & Johnston, 1999, p. 15). The staff in schools with ESS would
be more able to provide that for their students, as they have the ability to resolve problems through their decision-making power.

A further study of ESS was conducted by Sinden et al. (2004), whose qualitative study focused on six high schools that scored high for enabling bureaucracies in Hoy and Sweetland’s (2001) previous study. Sinden et al.’s (2004) study found that the principals in these schools sought to find balance between order and freedom (Sinden et al., 2004). Other key elements of these principals in the study were flexibility, two-way communication, and trust (Sinden et al., 2004, p. 475). A conclusion encouraged additional quantitative studies to further examine these relationships (Sinden et al., 2004).

Gray, Kruse, and Tarter (2016) examined the role of ESS, collegial trust, and academic emphasis in the development of professional learning communities (PLCs) in 67 urban elementary, middle, and high schools. The results showed a strong correlation between PLC development and ESS, collegial trust, and academic emphasis (Gray et al., 2016). The study found the strongest correlation between the variables ESS and PLC, demonstrating that as teachers’ perceptions of the development of PLCs strengthened, so did their perceptions about ESS. (Gray et al., 2016). The authors saw this study as confirming the importance of formal organization structures in providing the ability to build community, which in turn can lead to student achievement (Gray et al., 2016). These studies suggested the positive effects of ESS within schools.

Research by Schaefer et al. (2016) found that ESS sets the stage for AO and academic achievement, as findings showed that ESS positively correlated with AO and was predictive beyond the effects of SES. This study found that schools with higher ESS also had higher AO (Mitchell et al., 2016), and schools also had higher academic achievement.
regardless of SES (Mitchell et al., 2016). In that study, the relationship among the variables was stronger in the elementary schools than in the middle schools. The researchers hypothesized that this decline may be due to higher levels of departmentalization, specialization, complexity of task, and decreased parental involvement (Mitchell et al., 2016). Another study of elementary schools in Taiwan confirmed the relationship between ESS, AO, and academic achievement (Wu et al., 2013). More research is needed into middle school ESS and their relationship with middle level concepts.

**Enabling school structure (ESS) and academic optimism (AO).** The previous studies examined either ESS or AO. Several studies examined both of these variables within schools. McGuigan and Hoy (2006) studied 40 elementary schools in suburban and rural Ohio. The researchers theorized that AO would enhance student achievement and that ESS would provide the structure necessary to create AO (McGuigan & Hoy, 2006). The teachers completed the ESS and AO surveys, the same instruments used in the earlier research discussed. The McGuigan and Hoy (2006) study found a correlation between SES and student achievement (.62 math, .50 reading), that ESS was significantly correlated to AO, even controlling for SES (.46), and that high academic optimism meant higher academic achievement even controlling for SES (.45 math, .38 reading). McGuigan and Hoy concluded that though the results were moderate, there was evidence to indicate that the way a principal organizes a school makes a difference to teachers’ confidence and students’ success.

Building upon the McGuigan and Hoy (2006) study, researchers examined the factors of AO, ESS, and collective responsibility in 103 elementary schools in Taiwan. They surveyed 1,571 teachers using the scales for school level AO, ESS, and the added dimension of collective responsibility. The study found results that were consistent with research in the
U.S. with the exception that SES was not correlated to academic achievement (-0.06; Wu et al., 2013). The results showed that AO acted as a hub for factors that affected student achievement; AO was correlated to achievement at .58 (Wu et al., 2013). Several organizational factors including collective responsibility indirectly affected school achievement indirectly through AO (Wu et al., 2013). The researchers concluded that ESS works indirectly through AO by creating the structure for teachers and students who can then work trustingly together, which increases achievement (Wu et al., 2013).

A recent study conducted in 42 elementary and 16 middle schools in one mostly urban district in the southern U.S. examined the factors of ESS, AO, and academic achievement (Mitchell et al., 2016). A total of 1,713 teachers completed the ESS and AO surveys. Student achievement and SES data were collected through the state’s department of education (Mitchell et al., 2016). The researchers found that, again, the variables of academic emphasis, collective efficacy, and faculty trust created the latent variable AO and both academic optimism AO and ESS were determined to be reliable measures (Mitchell et al., 2016). Through structural modeling, the researchers found that ESS, elementary status, SES, and AO explained 77% of the variance in academic achievement, with AO making the largest contribution (.55; Mitchell et al., 2016). ESS was positively correlated and predictive of AO, suggesting that ESS sets the stage for AO and thus for student achievement (Mitchell et al., 2016). Although student achievement at the elementary school was positively correlated with AO, this outcome declined at the middle level; the authors theorized that this may have been due to higher levels of departmentalization, specialization, complexity of task, and decreased parental involvement (Mitchell et al., 2016). They suggested that as ESS is not affected by these factors, it may be even more important to set the stage for AO in
middle schools (Mitchell et al., 2016). The research on ESS and AO is consistent in the findings. The following studies have found the measure of ESS to be valid and reliable: Hoy and Sweetland (2001), McGuigan and Hoy (2006), Wu et al. (2013), Gray et al. (2016), and Mitchell et al. (2016). The latent construct of the variable AO from the factors of academic emphasis, collective efficacy, and faculty trust has been consistently shown to be strongly related, and the measure has proven to be reliable and valid according to the following researchers: Hoy et al., (2006), McGuigan and Hoy (2006), Smith and Hoy (2007), Bevel and Mitchell (2012), Wu et al. (2013), Boonen et al. (2014), Mitchell et al. (2016), and Hong (2017). AO is shown to affect student achievement regardless of SES according to McGuigan & Hoy, 2006, Smith & Hoy, 2007, Bevel & Mitchell, 2012, Wu et al., 2013, Boonen et al., 2014, and Mitchell et al., 2016.

Beyond initial studies that focused on the creation of the ESS instrument, only one study included middle schools, all others were conducted at elementary or high schools. Mitchell et al. (2016), who included middle schools in their study, found a weaker connection between the variables of ESS, AO, and academic achievement. These authors suggested that the structure of the middle school could be a factor. Examining the structures of middle schools and their relationship to the variables of ESS and AO could give principals information about how to organize the school to better affect student achievement.

**Academic achievement.** In Bandura’s (1986) model of social cognitive theory, the students’ behavior is influenced by personal and environmental factors, which will be seen in their academic actions in school. Student’s level of academic achievement in regard to student outcomes provided a means of comparing participating schools in this study. In this study, academic achievement was measured through the use of the school’s level of
proficiency on the state-mandated mathematics and English language arts (ELA) M-Step test from the previous year.

Anfara and Lipka (2003) discussed the commonly held belief by middle school educators that the middle school concept leads to higher academic achievement. An overview of studies connecting middle level concept with academic achievement are inconclusive as a whole, often citing concerns with the level of implementation as a factor. A study of three middle schools’ school improvement process guided by STW found increased academic achievement in mathematics related to the middle school concepts, but not in English language arts (ELA; Flowers et al., 2017). Although another study found schools with high levels of implementation made greater academic gains (Felner, et al., 1997).

An important purpose of the school is to educate students, and this may be measured by their level of academic achievement. A number of studies demonstrated the effect of school dynamics upon students’ academic success: Hoy and Hannum (1997), Carpenter et al. (2004), and Mulhall, Flowers, and Mertens (2002). Since the legislation, No Child Left Behind (NCLB, 2001) was enacted with a focus on high-stakes testing and punitive measures for failing to achieve, test scores have taken center stage in education. Research in middle level concepts have cited this shift as a stumbling block in implementing middle level concepts (Schaefer et al., 2016). Recent middle level research has examined specific middle level strategies and their success in promoting academics (Schaefer et al., 2016).

Bandura’s (1986) triadic social cognitive theory creates a structure of behavioral, personal, and environmental factors. Through this lens, the relationship of the variables can be examined for their effects upon each other. Studying the structure and culture of the
schools through their level of ESS, AO, level of middle school concept implementation, and student academic achievement may provide insights into the factors at work.

**Conceptual Framework**

Bandura’s (1986) social cognitive theory describes the interaction of three factors: (a) behavior, (b) environmental influences, and (c) personal factors in explaining human agency. By applying this theory with school level factors, the interplay of collective human agency can be examined within the school setting. The personal factors examined included the collective internal school beliefs of the teachers at each middle school as measured by the AO survey; a latent variable formed by academic emphasis, collective efficacy, and faculty trust in parents and students (Hoy et al., 2006); and by the ESS survey, which examines the flexibility within the bureaucratic system of the school (Hoy & Sweetland, 2001). Figure 1 displays the factors in Bandura’s (1986) social cognitive theory that shows the triadic reciprocality between behavior, environmental influences, and personal factors.
The two internal factors, AO and ESS, may be influenced by the environmental factors and may influence or be affected by the choices made by the staff. A middle school’s attainment of STW status or lack thereof, the overall academic achievement of the students as measured by their state exams in the areas of mathematics and English language arts (ELA), and the level of middle level strategy implementation are all behaviors or outcomes. The environmental influences are the size of the school, whether urban, suburban, or rural. Other environmental influences include the percentage of free and reduced lunch, the grades within the school, and the demographics. The focus of the investigation is to examine the relationship between these variables in the participating middle schools in order to better understand how each variable may influence the others.

The social cognitive theory is based on the triadic reciprocality of personal factors, behavior, and environmental influences; these all act as determinates of each other (Bandura, 1986). The personal factors, internal to the person, are what people think, feel, and believe, which affect how they behave (Bandura, 1986). The latent factor of AO is the combination of academic emphasis, faculty trust in parents and students, and collective efficacy, all internal collective factors of the school. Academic emphasis is a belief that all students can succeed, faculty trust in parents and students is an emotional feeling, and collective efficacy is the staff’s beliefs about their ability to promote change (Hoy et al., 2006). In addition, the internal organizational structure of the school is an important internal factor, as it can have a restraining or enabling influence on the actions of the staff as a whole (Hoy & Sweetland, 2001). According to Bandura (1986), “The amount of imbalance of social power depends on the extent to which people exercise the influence that is theirs to command” (p. 452). An ESS allows the faculty of a school to make timely, collective decisions for the benefit of the students (Hoy & Sweetland, 2001).

Environmental conditions can at times create great restraints on behavior, so it is important to consider their influence on behavioral and cognitive factors (Bandura, 1986). Environmental conditions in schools include the grade structure, the SES of the students, government policies, and the location of the school be it rural, urban, or suburban. These environmental factors are external as they exist within the school’s environment and are not within the control of the school.

The social behavior of people is interdependent on the personal factors and the environmental influences. The most dominant factor is dependent on the relative strengths of the other two factors (Bandura, 1986). As a whole, the social behavior of a school may be
seen as its actions. If a staff works collaboratively to attain the standards set in the STW rubric or implements certain middle level strategies, their choices have been affected by the personal and environmental influences of that particular school. The students’ academic achievement scores are a factor of their behavior during the testing situation, which is also influenced by personal factors, such as how much they have learned, their self-efficacy beliefs, and even their physical status on that day. Student achievement is also influenced by the environmental factors, such as their SES status or the conditions of the school. The overall academic achievement at each school is an outcome affected by the other factors. The decision to apply for STW or to implement middle level strategies are also actions influenced by the internal and environmental factors.

Summary

Examining the interactions between the internal factors of AO and ESS, the environmental influences, and the behaviors as seen in the faculty’s implementation of middle school strategies, attainment of STW status, and the students’ level of academic achievement provides an understanding of how these factors influence one another. Among middle level characteristics, several of the characteristics are suggestive of an ESS. Interdisciplinary teams are seen as requiring four elements: (a) organization (same schedule, space, and students), (b) community building, (c) teamed instruction, and (d) governance (George & Alexander, 1993; Jackson & Davis, 2000; NASSP, 2006). George and Alexander (1993) stated that exemplary middle schools are too complex to be managed unilaterally by the front office and must include shared decision-making both within the team and across the school (George & Alexander, 1993). A list of effective middle school team attributes included autonomy; teams need to be able to make decisions about their own
policies, schedules, activities, curricular plans, which ensure students’ success and more
(George & Alexander, 1993).

George and Alexander (1993), Jackson and Davis (2000), and NASSP (2006) noted
shared decision-making as a characteristic of exemplary middle schools. The team concept is
not only the model for organization of students but also as decision-making for the school.
Successful middle schools have a collaborative decision-making body that works on
problems that arise, the master schedule, and the advisory curriculum among other duties
(George & Alexander, 1993; Jackson & Davis, 2000; NASSP, 2006). This collaborative
problem-solving at a building level suggests a reduction in the power differential between
principals and teachers.

All of these program design choices made at a middle school are part of the
behavioral influences in Bandura’s (1986) social cognitive theory. Choices by the staff
regarding programming, instruction, and collaboration are behaviors of the staff within the
school. The other factors, not within the control of the staff, such as the SES of the
community, the location of the school, and its grade configuration are environmental factors.

Middle schools are working to positively support students as they experience their
rapid mental, emotional, social, and physical growth. Middle level concepts require a strong
belief system within the school, rigorous academics, strong relationships with parents and
students, and a school structure that allows collaborative decision-making while maintaining
the middle level principles (George & Alexander, 1993; Jackson & Davis, 2000; NASSP,
2006). A school can choose to be involved with the National Forum’s STW program and use
the STW rubric (see Appendix A) as a guide for implementing the middle school concept and
monitoring their level of attainment.
In this study, both middle schools with STW status and those without were surveyed, creating two categories of schools, one identified as having attained a certain level of middle school concept implementation based on set criteria and a second group of schools who have not attained or pursued STW status. The STW program uses the School Self-Study and Rating rubric to evaluate and guide their implementation of middle school concepts (National Forum to Accelerate Middle-Grades Reform, n.d.). The National Forum’s School to Watch STW program emphasizes four areas: (a) academic excellence, (b) developmental responsiveness, (c) social equity, and (d) organizational structures and processes. The schools will also be asked to identify whether they have implemented certain middle level strategies. This information will provide additional evidence regarding the implementation of middle level concepts, as not all middle schools have applied to the STW program.

The middle level strategies discussed previously are supported by the concepts of ESS and AO. These measures are attractive because they suggest the potential to overcome SES factors that may impair student achievement (Hoy et al., 2006; Mitchell et al., 2016). Further examining the relationship between middle level practices, ESS, and AO increases our understanding of how these factors may enhance student success at the middle level. The parameters of the methodology employed in this study are delineated in Chapter 3.
Chapter 3: Methods

Research Tradition

A quantitative research approach was chosen to examine the relationship between the specific variables of enabling school structure (ESS), academic optimism (AO), School to Watch (STW) status, socioeconomic status (SES) and academic achievement within the middle school setting. Quantitative data were collected through two surveys, ESS and AO (see Appendices B & C) that were employed in previous research. Using the same parameters and analysis methods as employed in previous studies allowed for greater ability to apply comparisons and substantiate data findings.

Yilmaz (2013) defined quantitative research as looking to explain social behaviors through measuring isolated variables within a framework. Creswell (2014) explained that survey research provides “a numeric description of trends, attitudes, or opinions of a population by studying a sample of that population” (p. 13). Creswell discussed a method of nonexperimental quantitative research used in this study; wherein correlational statistics gathered from multiple groups were used to analyze relationships between selected variables. King, Keohane, and Verba (1994) saw both qualitative and quantitative traditions as “deriv[ing] from the same underlying logic of inference” with only stylistic differences (p. 4).

Vogt, Gardner, and Haeffele (2012) argued that the quantitative-qualitative decision is not about research design, but simply how one will code their data for analysis (p. 4). They opined that important design decisions are about the evidence—what evidence, how to collect, and from whom (Vogt et al., 2012).
In this study, data were collected through two surveys completed by individual teachers and student achievement and STW status was collected from the Michigan Department of Education and the Michigan Schools to Watch websites respectively. Some demographic information (see Appendix D) was collected from the school’s principal. These data were used to create a school level rating for each of the variables in the study, which were compared during the statistical analysis. This plan clearly fit with the quantitative approach, as the researcher looked to isolate these variables (Yilmaz, 2013). In this study, the researcher remained distant and independent to control bias, maintain their objectivity, and keep her values out of the work by focusing on the evidence to shape conclusions (Creswell, 2014).

The data decisions regarding what to collect, how to gather it, from whom, and the plan for statistical analysis firmly placed this study in the quantitative tradition (Vogt et al., 2012) and the plan clearly fit with the quantitative approach, as the researcher looked to isolate specific variables (Yilmaz, 2013), used surveys to collect data to examine objectively, and applied deductive logic (Creswell, 2014).

**Research Design**

In addition to survey data, this study included data collected from publicly accessible websites and information from the school principal. The survey design provided an efficient method of obtaining the data directly from the teachers within each building (Vogt et al., 2012). Use of online self-administered surveys ensured that all participants received the same survey and directions. The process was a low-cost method that allowed data collection without individual visits by the researcher to administer the survey at each participating school (Vogt et al., 2012).
Although the data were tabulated to create school level variables, it was necessary to collect information from individual teachers to acquire their views on topics of structure and climate at their schools. This subjective data related to their attitudes, beliefs, and values; thus, it needed to be obtained from individuals (Vogt et al., 2012).

Answers to each survey question were recorded on a Likert scale. The use of this structure maintained some control over the range of answers and fit within the quantitative design (Vogt et al., 2012). The voluntary electronic survey facilitated anonymity and the privacy of the method provided participants the opportunity to be honest in their responses (Vogt et al., 2012). A disadvantage of the anonymous and voluntary survey was the possibility of an inadequate response rate. The information explaining the survey was carefully considered to address this concern including pointing out its brief length and ease of completion (Dillman, Smyth, & Christian, 2009).

The method of numerical-based comparison allowed for easier examination of the variables and their relationship within and between the schools and allowed for generalizations to be made to similarly situated middle schools (Yilmaz, 2013). The deductive approach provided broad generalizable findings for comparison and evaluation (Creswell, 2014). The survey design of structured questions with Likert scale responses, gauged the respondents view on the topics, assisted in determining differences between groups, and permitted display of statistical data along a continuum (Vogt et al., 2012).

In addition to these factors, the design of this study followed a similar structure employed in foundational research related to the variables examined in this study. The use of surveys, collecting data from public websites, and school demographic and middle level strategy information allowed this study to mirror the design employed in previous research.
This established history of research design in studies examining similar questions increased the validity and reliability of the data collected (Yilmaz, 2013).

Variables

Previous research found that AO and ESS are independent variables that can influence the dependent variable of student academic achievement (McGuigan & Hoy, 2006; Mitchell et al., 2016; Wu et al., 2013). This research has shown that when a school administrator builds an ESS and the staff has a strong AO belief, the academic achievement of the students was elevated. This study showed that the independent variables of STW status and middle level strategies employed at a middle school may affect the dependent variables of AO and ESS. In examining these factors, it appeared that schools with higher levels of AO and ESS are reflective of middle level strategies as codified in the STW rubrics. This study examined the relationship between these variables.

The research into AO, ESS, and middle level practices has established that strong employment of these factors at a school positively influence academic achievement (McGuigan & Hoy, 2006; Mitchell et al., 2016; Wu et al., 2013; Flowers et al., 2017; Anfara & Lipka, 2003; Felner et al., 1997). Thereby academic achievement was a dependent variable effected by the other variables in the study, which acted as independent variables with this relationship. The structure of the variables relationship can be seen in Figure 2.

STW status & middle level strategies → AO & ESS → Academic Achievement

*Figure 2. Variable relationships examined*
Sample

Dillman et al. (2009) noted that an adequate sample size was important for being able to draw conclusion from the data. Vogt et al. (2012) concurred that a reasonable data pool was needed to give validity to findings. Approximately 190 Michigan middle schools located in counties with a number of school districts in different regions of the state were invited to participate in this study; 29 middle schools completed the data requirements to be included. All responses were kept confidential and alternate identifications for the schools were used for data reporting purposes. Middle schools that had attained the STW designation and those that had not were surveyed, allowing for comparisons between the two categories of schools, which was one of the middle level variables. Vogt et al. (2012) explained that this was purposive sampling, as the teachers and principals of Michigan middle schools were specifically targeted.

The researcher’s membership in a countywide principals’ network and having an affiliation with the Michigan STW program provided connections to potential data sources that were willing to assist in the research and positively enhanced the response rate (Vogt et al., 2012). An element of snowball sampling was also employed, as some of the Michigan STW schools are part of large districts with other middle schools (Vogt et al., 2012). Collecting the data from these additional schools was advantageous, as these methods assisted in obtaining a sample that was both representative and larger in size (Vogt et al., 2012).

Dillman et al. (2009) pointed out that sample size is an important element in research, as it affects the confidence level of the results. Confidence in the data is not simply a function of a high response rate, but also to diminish coverage, nonresponse, and
measurement error (Dillman et al., 2009). Use of a sample size calculator with an anticipated effect size of .15, power level of .8, and the probability level set at .05 produced a minimum sample size of 39 with 100 needed for model structure. This result was crafted with anticipation of one latent variable (AO) and a count of five observed variables with ESS, academic emphasis (AE), faculty trust in students and parents (FT), collective efficacy (CE), and academic achievement. The ideal sample size anticipated use of structural equation modeling. This research did not achieve the sample size necessary for the use of structural equation modeling.

Through an online link, the principal of each participating school completed the school demographics section for their school and identified the use of certain middle level concept strategies. The combined AO and ESS surveys to complete in electronic format were provided to the teachers in the school by the principal. The AO survey combined the elements of AE, CE, and FT. The student achievement data was obtained through the Michigan Department of Education website, and the school’s STW status was available on the Michigan Schools to Watch website.

**Instrumentation**

King et al. (1994) shared five guidelines for improving data quality; two relate directly to the measurement used: (a) researchers should “maximize the validity of our measurements” and (b) “ensure the data-collection methods are reliable” (p. 25). Rosenthal (2011) concurred that it is important that the instrument employed in research measures what it is meant to measure, and that it is reliable, producing measurements that are consistent and repeatable. The instruments in this study were developed and used in several previous studies, thereby establishing the means to acquire and analyze valid and reliable data.
The AO and the ESS surveys were shared electronically with the principal of each participating middle level school who then distributed it to the teachers in the building to facilitate ease of completion and increase the return rate. The AO survey was the compilation of three factors, AE, CE, and FT that formed the latent variable (Hoy et al., 2006). Permission to use these surveys was granted by Dr. Wayne Hoy (see Appendix E).

The AE measure was a subscale of the Organizational Health Inventory (Hoy, Tarter, & Woolfolk Hoy, 2006). This measure had eight Likert items on a 4-point scale ranging from rarely to very frequently occurs. Sample items on the scale included “the school sets high standards for performance,” “students try hard to improve on previous work,” and “teachers in this school believe that their students have the ability to achieve academically” (see Appendix B). Previous research has shown the reliability of this scale with an alpha coefficient of .83 (Hoy et al., 2006, p. 434).

CE and FT had 22 items together on a 6-point Likert scale that ranged from strong agree to strongly disagree. The CE was the short version of the collective efficacy scale and the FT was the omnibus trust scale (Hoy et al., 2006). Sample items on the CE scale included, “teachers in this school are able to get through to the most difficult students,” “teachers in this school believe that every child can learn,” and “if a child doesn’t want to learn teachers here give up.” The FT had items such as “teachers in this school trust their students,” “parents in this school are reliable in their commitments,” and “students here are secretive.” These measures have been shown to be reliable in previous research with alpha coefficients of CE at .91 and FT .94 (Hoy et al., 2006, p. 435). Rosenthal (2011) noted that .7 is an acceptable reliability coefficient.
The constructs of AO demonstrated strong reliability coefficients in previous tests. The latent construct of AO was initially tested using structural equation modelling (Hoy et al., 2006). Smith and Hoy (2007) found a factor analysis showed loadings of CE of .99, FT of .94, and AE of .83 for AO. Bevel and Mitchell (2012) found similar results with factor loadings of CE at .96, FT at .88, and AE at .89 in forming the latent construct of AO.

The ESS survey comprised 12 items using a 5-point Likert scale ranging from never to always (see Appendix C). Although the ESS survey was originally a 24-item scale with a Likert construction used to measure two dimensions of bureaucracy, Hoy and Sweetland (2001) reported that results found one unitary dimension, which allowed the measure to be reduced to the 12 items with the strongest factor loadings with enabling, hindering, and coercive items represented. Sample items from the scale included the following: “administrative rules help rather than hinder,” “the administrative hierarchy of this school enables teachers to do their job,” and “administrative rules in this school enable authentic communication between teachers and administrators” (see Appendix C). The construct was found reliable in three separate tests resulting in alpha coefficients of .90, .93, and .95 (Hoy & Sweetland, 2001). The reliability coefficients in this study were well above the .7 threshold (Rosenthal, 2011).

This study used both AO and ESS instruments for collecting data. Several previous studies have successfully used these two instruments together. McGuigan and Hoy’s (2006) study of 40 elementary schools in Ohio used path analysis finding AO as a latent construct of CE, FT, and AE with all factor loadings at .95 or above. This same study found that ESS predicted AO with a beta of .37 when controlling for SES, and AO and predicted student achievement in math at .54 and reading at .50 also while controlling for SES.
Wu et al. (2013) conducted a study of elementary schools in Taiwan and found that AO had a significant impact on student achievement, .58 and ESS had an impact of .21; in this study, SES had little effect on achievement overall. This study also found their structural equation model was a good fit, and this was consistent with studies in the U.S. Mitchell et al. (2016) conducted another study using both measures and found them reliable with Cronbach’s coefficient as ESS at .91, CE at .87, FT at .92, and AE at .90. That study also found that ESS was positively correlated with all three of the AO factors: CE at $r = .41$, FT at $r = .39$, and AE at $r = .42$. The researchers found that ESS had a significant direct effect on AO with an indirect effect on student achievement, whereas AO had a significant direct effect on achievement. The studies of McGuigan and Hoy (2006), Wu et al. (2013), and Mitchell et al. (2016) as discussed previously found fairly consistent results with the use of both instruments.

In this study, the middle level strategy information for each school was provided by the principal through an online link. The questions regarding the school’s use of middle level concepts was modeled on those in a study by Valentine, Clark, Hackmann, and Petzko (2000) of leadership in middle level schools from the National Association of Secondary School Principals (NASSP). The NASSP’s study in 2000 was their fourth research project that examined middle level leadership in three decades, and many of the questions were used in all of the studies (Valentine et al., 2000).

**Data Collection**

King et al. (1994) stated, “Social science research, whether quantitative or qualitative, involves the dual goals of describing and explaining” (p. 34). Explaining involves connecting cause and effect, while describing is the collection of facts. There is an interactive
relationship between description and explaining; each informs the other. King et al. (1994), posited that inference is using the facts we know to learn about facts we do not and that this is the goal of social science. Thus, it stands to reason that collecting the data to provide description for the explanation is important. Vogt et al. (2012) opined that data collection should be systematic, describable, and justifiable in order for there to be confidence in the work.

Principals of approximately 190 Michigan middle schools located in counties with a number of school districts in different regions of the state were sent a request for their school’s participation in this research study. Twenty-nine middle schools completed the data requirements to be included. At the principal’s request, the teaching staff of participating middle schools were asked to complete the combined AO and ESS surveys online. In addition to distributing the surveys, the principals of the participating schools were asked to share information about the school demographics and to identify the school’s implementation of certain middle level strategies. The demographic data requested included the following:

- Percentage of free and reduced lunch,
- number of students,
- location (urban, suburban, rural),
- grade configuration,
- number of certified staff members,
- schools to watch (STW) status.

Identification of middle level strategies included the following:

- Teaming,
- team planning time,
- advisory program,
- school schedule,
- exploratory options, and
- middle level teacher preparation and professional development.

The STW status was confirmed through the Michigan Schools to Watch (STW) website. The academic achievement levels of the schools were found on the MI School Data website, which is part of the Michigan Department of Education. The English language arts (ELA) and mathematics scores from the state-mandated M-Step tests were used to construct a measure of academic achievement at the building level. The school average proficiency in ELA and mathematics on the M-Step was obtained and their average was used to measure academic achievement for each school (Hoy et al., 2006). The SES level for this study was based on the percentage of students who participated in the federal free and reduced-price school lunch program; thus, the higher the percentage the lower the SES status of the school (Smith & Hoy, 2007).

**Pilot test of survey instruments.** Preceding the actual data collection for the study, the AO and ESS survey instruments were field-tested with volunteers from the staff of teachers the staff from one middle school. Creswell (2014) described the purpose of the pilot testing to try out the directions, format, questions, and the scale before the actual data collection. Through feedback from the staff members who volunteered to participate in the field test, elements that needed to be addressed for clarity and ease of participation were addressed. This process assisted in obtaining better responses for the study.

Dillman et al. (2009) advised that a pilot or field test can be especially helpful when data is collected through web surveys, as many difficulties can be experienced such as non-
working hyperlinks, questions that will not allow respondents to move past, or issues with a particular email provider.

The principal of a large Michigan middle school composed of approximately 70 teaching staff and three administrators at the selected pilot test site received an email with the consent letter (See Appendix F), the links to the survey, and the administrator questionnaire. The request to participate in the pilot test was sent on Monday, June 4, 2018, and responses were collected throughout that week. This process mirrored the planned method for the actual data collection as it was important to test the exact procedures (Dillman et al., 2009).

The survey and the questionnaire were created using Google forms, and the data were collected in the same format. Nineteen teachers and one administrator volunteered to participate in the pilot test process. In addition to the survey questions, the pilot survey included the following three additional questions: (a) how many minutes did the survey take to complete, (b) were the directions clear, and (c) do you have any suggestions to make the survey experience better? The average time reported for participants to complete the survey was eight minutes. All respondents found the directions clear. A suggestion to improve the experience pointed to difficulty of responses as some questions were stated in the positive and others in the negative. As this mix of positive and negative question stems is part of the established instrument, and only one of 19 found it difficult, no change to the questions occurred.

The links to the survey and questionnaire worked without any problems. The data were easily collected through the use of Google forms, were easily summed up into building level variables, and transferred to SPSS for analysis. The researcher found the pilot useful in determining the average time to complete the survey and in testing the electronic format.
**Increasing the response rate.** Obtaining data is key to the success of the research endeavor. As Vogt et al. (2012) noted, it is important for those sampled to be both willing and able to participate in the research. Theories abound regarding how to motivate people to participate in research. Social exchange theory focuses on appealing to potential respondents in multiple ways (Dillman et al., 2009). Essentially, this theory posits that “people engage in a social exchange with others when the perceived rewards outweigh the expected costs” (Dillman et al., 2009, p. 22). Multiple ways to increase participation include the following: provide information about the survey, ask for assistance, show positive regard, say thank you, support group values, and give tangible rewards (Dillman et al., 2009). This study aimed to incorporate these through the language in the consent letter and providing the opportunity to win a $20 eGift card from Amazon for each participant of each school that participated.

The cost of participation can be decreased in various ways, such as making it convenient to respond, avoiding subordinating language, keeping the survey short, and minimizing the request for personal or sensitive information (Dillman et al., 2009). In this study, the use of an electronic web survey transmitted by email made participation easy. Promoting the short time needed to complete the survey, not asking for personal information, and carefully examining the language of the consent letter were essential in reducing the cost of participation. Through the application of social exchange theory, the researcher sought to increase survey participation to collect a sufficient body of data for this study.

**Data Analysis**

Rosenthal (2011) advised that researchers should aim for a balanced model of data interpretation, such as examining five factors: (a) statistical significance, (b) size of association, (c) generalizability, (d) importance, and (e) causality. When all of these factors
are given consideration, the data interpretation may be balanced and comprehensive. The analysis of data begins with looking at descriptive inference or understanding that what we are seeing is typical phenomenon or is an outlier (King et al., 1994).

The analysis of the data in this study began with the descriptive statistics as this provided an understanding of the study sample (Rosenthal, 2011). It was important to assess the underlying assumptions with the data. The data analysis was conducted using IBM statistical software SPSS. Descriptive statistics of the demographic data for the schools included the mean, standard deviation, maximum, minimum, and examining the distribution (Rosenthal, 2011). Histograms showed whether the data were skewed or bimodal, which would mean the sample was not as randomly distributed as desired (Rosenthal, 2011). Further, these data indicated how representative the sample was of the middle schools in the state and provided an overview of the diversity or lack thereof regarding the size, type, and SES of the schools included in the study. The sample’s representation affects the generalizability of any findings (Vogt et al., 2012). Through the use of bivariate correlation, it was checked that the independent variables are not highly correlated, not above .5; otherwise, factor analysis was needed to construct a latent variable.

The unit of analysis was the school, and survey data were aggregated to the school level for each of the variables: AE, CE, FT, and ESS (Bevel & Mitchell, 2012). Academic achievement was tabulated by finding the school proficiency average for the state-mandated M-Step tests in ELA and mathematics (Hoy et al., 2006). The school’s STW status was a yes or no determinant. The SES was determined by the percentage of students who were participating in the federal free-and-reduced-price school lunch program, the higher the
percentage the lower the SES status of the school (Smith & Hoy, 2007). Once these results were aggregated, a building level score was determined for each of the factors.

In this study, each of the surveys, ESS and AO, were also examined for internal reliability: “The degree to which multiple items on a scale are measuring the same thing: if they are they will be highly correlated” (Vogt et al., 2012, p. 350). SPSS statistical software was used to do produce Cronbach’s alpha, a score of reliability that determines whether surveys that use a Likert scale of multiple responses accurately measure the chosen variables. The surveys had to have an alpha of at least .7 to be considered reliable.

A factor analysis was conducted with the variables AE, CE, and FT to confirm their formation of the latent variable AO (Rosenthal, 2011). This latent construction has been shown to exist in previous studies (Hoy et al., 2006; Smith & Hoy, 2007; Bevel & Mitchell, 2012) but needed to be confirmed for the purposes of this study. An Eigenvalue over 1 was needed to indicate a strong latent value.

Multiple regressions were used to examine the interaction of the variables AO, ESS, STW status, SES, and academic achievement. This was the best method for the sample size, as it allowed the researcher to examine the relationship between several independent variables and a dependent variable. In a multiple regression, the R Square told us the amount of variance explained by the model. The Beta coefficients indicated which variables had the largest impact. The Sig value should be less than .05 to indicate the variable is a significant predictor (Rosenthal, 2011). A path analysis model was created from these multiple regressions to make clear the relationships between the variables (Rosenthal, 2011). SES was included in the model to separate it from the effects of the other variables.
Ethical, Legal, and Moral Concerns

Ethics can be thought of as good conduct towards others. Vogt et al. (2012) suggested that this aspect needs to be kept in the forefront of a research project from its inception to the final sharing of the conclusions. Survey research tends to be highly structured and less invasive than other forms of research, and as much of the details for participation are known in advance, it may seem few ethical issues are involved; however, as in other research designs, categories of concern for participants are consent, harm, and privacy (Vogt et al., 2012).

A main concern in survey research is guarding the anonymity and confidentiality of the respondents and their responses (Vogt et al., 2012). In this study, the data collected from the teachers within each school were aggregated at the building level. The answers for each question were aggregated by building after they were collected. These aggregated answers and the number of respondents were the data focus, but the names of respondents were not collected. At no point in responding to the survey were teacher names or other identifying information connected to survey answers available to the researcher. All responses were aggregated and no open responses could lead to identification of the participants. Anonymous answers to questions using a Likert scale also prevented respondents from any harm as the result of their responses.

Individual respondents need to be shielded from any harm as well as the schools and the broader category of middle school teachers (Vogt et al., 2012). The aggregate data from the survey response items were further aggregated into one value for each of the variables. These variables for each school were the data analyzed. At no point were these data numbers shared publically for each school, and school names were coded within the data set. The only
key for these school names and their codes was kept in a locked location by the researcher. The only need for this information was to correctly assign the data numbers within the data set for accuracy. This school-level protection from harm was an important factor to consider, as there are a limited number of designated schools to watch in Michigan; care and accuracy was needed to avoid an accidental connection to a specific school in the reporting of data gathered (Vogt et al., 2012).

The survey description and directions contained important information for all respondents and assurance about the maintenance of anonymity. Survey information also included a consent agreement and awareness of the voluntary nature of completing the survey (Vogt et al., 2012). As the building principal shared the electronic link to the survey with teachers in participating buildings, it was important to make participation clearly voluntary, not to be mistaken for a requirement because of the administrator’s involvement in distribution (Vogt et al., 2012). This understanding was also important in the use of snowballing to obtain additional schools to participate in the research study (Vogt et al., 2012).

Research in the social sciences can have impact upon public policy and thus a moral responsibility to the broader society (Vogt et al., 2012). This category of research is also often conducted in publically supported institutions that rely upon tax dollars; thus, any research should be of value and done with integrity, as to not waste public funds (Vogt et al., 2012). In this study, publically shared data and conclusions drawn were considered carefully, viewed beyond the narrow confines of the study, and assessed for any potential larger impacts.
The legal concerns in research are frequently tied to fraud, misuse of grant money, or falsifying data and/or outcomes (Vogt et al., 2012). Further, research may reflect a conflict of interest with the participants in the study or the institution supporting their work (Vogt et al., 2012). Self-interest of the researcher is often the root of these issues. Recognition of self-interest helps the researcher to avoid ethical, legal, or moral missteps. In addition to the researcher’s understanding of the ethical issues and careful maintenance of boundaries, the university-guided process of working with a chair, a committee, and the IRB also assisted in monitoring each step of the research process (see Appendix G).

Summary

This study followed the quantitative tradition using two survey instruments and a questionnaire. The surveys measured the AO and ESS from teachers at Michigan middle schools as school-level variables. The questionnaire completed by the principal gathered the STW status, the implementation of middle level strategies, and demographic data about the school. Academic achievement of the students was obtained from public websites such as the Michigan Department of Education.

This study sought to determine the relationship of the dependent variables of AO and ESS and the independent variables of STW status and middle level strategies employed at a middle school. Findings of other studies indicated that schools with higher levels of AO and an ESS are reflective of middle level strategies, as codified in the STW rubrics. Academic achievement has been shown to be a dependent variable affected by the other variables in the study, which were acting as independent variables with this relationship (Flowers et al., 2017; McGuigan & Hoy, 2006; Smith & Hoy, 2007; Bevel & Mitchell, 2012; Wu et al., 2013; Boonen et al., 2014; Mitchell et al., 2016).
Responses to surveys and questionnaire were received from 29 Michigan middle schools; thus, multiple regression was used in the analysis of the data. A drawing for four $20 Amazon gift certificates was used as incentive when collecting the data. The survey and questionnaires were electronic, making them easily accessible to participants. The responses of the participants were protected and assured of anonymity. The results were tabulated and only reported as school level variables without any identifiers.
Chapter 4: Results

The results of the quantitative research examining the relationship between the specific variables of academic optimism (AO), enabled school structures (ESS), School to Watch (STW) status, socioeconomic status (SES), and academic achievement within the middle school setting are discussed in this chapter. This research was conducted to address the following three key questions in this study:

1. What is the level of AO, ESS, middle level strategy implementation, and academic achievement at each school?

2. Does the school’s implementation of middle level strategies and STW status affect the level of AO and ESS at a middle school?

3. Do the factors of AO, ESS, STW status, and middle level strategy implementation influence the academic achievement of students in math and reading?

A discussion of the analysis of the data consistent with the quantitative tradition is also included in this chapter. Data were collected through online surveys of principals and teachers in Michigan middle schools. The school demographic and middle level information survey was completed by a principal from each participating school. The teacher survey was a combined survey of AO and ESS. The data collected were organized to create school level variables, which were used in the analysis of the data. This chapter examines the connection between the school-level data analysis and the research questions to determine any significant relationships.

Demographics of the Sample

Michigan middle schools located in counties with a number of school districts in different regions of the state were invited to participate in this study. Of 190 schools invited,
29 completed the data requirements to be included in this study. In each participating middle school, the principal completed a demographic survey, and a minimum of four teachers in each building completed the AO and ESS combined survey. Academic achievement information was obtained from the MI School Data website.

As shown in Table 1, the grade structure of the schools varied with the majority having schools having Grades 6 through 8. The other grade structure options were represented within the study though in smaller proportions.

Table 1

*Middle School Grade Structure*

<table>
<thead>
<tr>
<th>Grade Structure</th>
<th># of Schools</th>
<th>% of Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grades 5 through 8</td>
<td>4</td>
<td>14%</td>
</tr>
<tr>
<td>Grades 6 through 8</td>
<td>22</td>
<td>76%</td>
</tr>
<tr>
<td>Grades 5 through 6</td>
<td>1</td>
<td>3%</td>
</tr>
<tr>
<td>Grades 7 through 8</td>
<td>1</td>
<td>3%</td>
</tr>
<tr>
<td>Grades 6 through 9</td>
<td>1</td>
<td>3%</td>
</tr>
</tbody>
</table>

*Note. n = 29*

The participating schools had a wide range in the number of students attending from a minimum of 108 to a maximum of 950; the mean was 524. The average student population in Michigan middle schools is 513.3. Table 2 shows average demographics of student population, teacher population, percentages of students eligible for free and reduced school lunch, and percentages of rural, urban, and suburban schools in the sample for this study and the State of Michigan.
Table 2

*Sample Averages Compared to State of Michigan Averages*

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Sample Average</th>
<th>State of Michigan Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Number of Students</td>
<td>524.3</td>
<td>513.3*</td>
</tr>
<tr>
<td>Average Number of Teachers</td>
<td>29.17</td>
<td>24.3*</td>
</tr>
<tr>
<td>% Free and Reduced Lunch</td>
<td>45.24</td>
<td>50.1**</td>
</tr>
<tr>
<td>% Rural Schools</td>
<td>31</td>
<td>28.1***</td>
</tr>
<tr>
<td>% Urban Schools</td>
<td>14</td>
<td>22.6***</td>
</tr>
<tr>
<td>% Suburban Schools</td>
<td>55</td>
<td>49.2***</td>
</tr>
</tbody>
</table>

*Note. n = 29
*National Center for Education Statistics 2009-10 & 2011-12
**Mi School Data 2017-18
***U.S. Dept. of Ed. 2015-16

The wide range in student population created a wide range in the number of middle grades teachers at participating schools, ranging from the fewest of five to the greatest of 70, giving an average of 29 teachers, slightly larger than the 24.3 average in Michigan K-12 schools. The participating middle schools also showed a broad range of socioeconomic statuses, with the percentage of students receiving free and reduced lunch ranging from 2% to 100%; this produced a mean of 45%, lower than the average in Michigan middle schools of 50.1%. By design, participating schools were located in rural (31%), urban (14%), and suburban (55%) areas, relatively aligned with the location of Michigan’s middle schools. The study had more suburban schools and less urban schools than the Michigan distribution. A further examination of the middle level data revealed that seven (24%) of participating
schools had attained Schools to Watch (STW) status, and 22 (76%) had not. Attainment of STW status denotes having successfully completed the STW process within the past three years guided by the STW rubric.

**Data Collection**

The data for this study was collected electronically. Approximately, 190 Michigan middle school principals were contacted via email and asked to participate in the study. The study was explained, privacy was assured, and links were provided to two surveys, the school demographic and middle level information and the teacher survey, a combination of ESS and the AO survey. Principals who chose to participate completed the school demographic and middle level information through the Survey Monkey link provided and shared the combined AO and ESS survey with their staff, who could choose to complete the survey through a Survey Monkey link as well. The final data collected were the academic achievement for each of the 29 participating Michigan middle schools that was obtained through the Michigan Department of Education’s public MI School Data website. The middle schools’ student proficiency rate for each of the middle level grades in both ELA and mathematics on the M-Step test for the 2017-2018 school year was averaged to create a school-level ELA and a school-level mathematics proficiency score; these two school-level scores were then averaged to create an overall academic achievement score.

**Data and Analysis**

Data were collected and analyzed to address the research questions related to successful middle schools. Each question is addressed individually followed by an overall analysis of the findings presented.
Examining data for Research Question 1. What is the level of AO, ESS, middle level strategy implementation, and academic achievement at each school?

The survey information provided by the 29 principals and 210 teachers from the 29 participating Michigan middle schools was downloaded into SPSS and tabulated. This information created school-level variables; the analysis was done at the school-level.

*Confirmatory factor analysis.* The AO score for a school was created from computing the academic emphasis (AE), collective efficacy (CE), and faculty trust in parents and students (FT) portions of the teacher surveys. These three factors built the latent factor of AO, the existence of which was verified through confirmatory factor analysis. One strong factor emerged with an eigenvalue of 2.84 and a cumulative explained variance of 94.7%, confirming that AO is a second-order construct made up of AE, CE, and FT. Table 3 shows confirmatory principal components and analysis. Table 4 shows the factor loadings on AO.

Table 3

*Principal Components Analysis*

<table>
<thead>
<tr>
<th>Component</th>
<th>Eigenvalues</th>
<th>% variance explained</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collective Efficiency (CE)</td>
<td>2.840</td>
<td>94.683</td>
<td>94.683</td>
</tr>
<tr>
<td>Faculty Trust (FT)</td>
<td>0.114</td>
<td>3.817</td>
<td>98.499</td>
</tr>
<tr>
<td>Academic Emphasis (AE)</td>
<td>0.045</td>
<td>1.501</td>
<td>100.00</td>
</tr>
</tbody>
</table>

*Note: N = 210*
Table 4

*Factor Loadings for Academic Optimism (AO)*

<table>
<thead>
<tr>
<th>Variables</th>
<th>Factor 1 Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collective Efficiency (CE)</td>
<td>0.983</td>
</tr>
<tr>
<td>Faculty Trust (FT)</td>
<td>0.975</td>
</tr>
<tr>
<td>Academic Emphasis (AE)</td>
<td>0.962</td>
</tr>
</tbody>
</table>

*Note.* One component extracted; extraction method: principal component analysis.

Descriptive statistics and reliability scores of the scales. The next level of analysis examined the descriptive statistics and reliability of the scales used in the study. The score for AO was obtained by averaging the standardized scores for the three factors of AE, CE, and FT. As seen in Table 5, the Cronbach’s $\alpha$ reliability scores for the scales in the study were ESS at 0.927, CE at 0.886, FT at 0.947, AE at 0.879, and AO at 0.912. The surveys used in this study had to have a Cronbach’s alpha of at least .7 to be considered reliable. As each of the survey measures met that criteria, they were considered highly reliable. Reliability information was not available for the M-Step ELA and mathematics proficiency scores.
Table 5

Descriptive Statistics and Reliability Scores for the Scales

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
<th>SD</th>
<th>Reliability α</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESS</td>
<td>4.058</td>
<td>2.396</td>
<td>4.854</td>
<td>0.491</td>
<td>0.927</td>
</tr>
<tr>
<td>CE</td>
<td>4.377</td>
<td>2.386</td>
<td>5.138</td>
<td>.618</td>
<td>0.886</td>
</tr>
<tr>
<td>FT</td>
<td>4.206</td>
<td>2.025</td>
<td>4.900</td>
<td>.685</td>
<td>0.947</td>
</tr>
<tr>
<td>AE</td>
<td>2.939</td>
<td>1.815</td>
<td>3.648</td>
<td>.434</td>
<td>0.879</td>
</tr>
<tr>
<td>AO</td>
<td>613.78</td>
<td>82.25</td>
<td>840.96</td>
<td>171.98</td>
<td>0.912</td>
</tr>
<tr>
<td>ELA scores</td>
<td>48.93</td>
<td>19.00</td>
<td>84.23</td>
<td>16.64</td>
<td>-</td>
</tr>
<tr>
<td>Math scores</td>
<td>41.37</td>
<td>5.90</td>
<td>76.63</td>
<td>19.24</td>
<td>-</td>
</tr>
</tbody>
</table>

*Note:* ESS = enabling school structure; CE = collective efficiency; FT = faculty trust; AE = academic emphasis; AO = academic optimism; ELA = English language arts.

Each individual school’s scaled score for AE, CE, FT, and AO is shown in Table 6. The ESS score for each school was also tabulated using the teacher responses from each individual school. The teacher responses from each survey were tabulated to create a school score for each of the factors, as the data were examined at the school level. All of these scores were scaled for easier comparison. In addition, the school ELA, math, and academic achievement scores are shown in Table 6. The mean for each of these categories is presented to allow for comparison of the data overall.
### Table 6

*School Scores for Measures of Academic Optimism, Enabling School Structures and Academic Achievement in Michigan Middle Schools*

<table>
<thead>
<tr>
<th>School</th>
<th>AE</th>
<th>CE</th>
<th>FT</th>
<th>AO</th>
<th>ESS</th>
<th>ELA</th>
<th>Math</th>
<th>AA</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS100</td>
<td>692.31</td>
<td>739.39</td>
<td>814.10</td>
<td>748.60</td>
<td>792.39</td>
<td>70.33</td>
<td>68.07</td>
<td>69.20</td>
</tr>
<tr>
<td>MS101</td>
<td>778.46</td>
<td>823.64</td>
<td>812.05</td>
<td>804.72</td>
<td>655.64</td>
<td>47.50</td>
<td>48.53</td>
<td>48.02</td>
</tr>
<tr>
<td>MS102</td>
<td>201.15</td>
<td>391.82</td>
<td>429.49</td>
<td>340.82</td>
<td>529.92</td>
<td>31.15</td>
<td>33.60</td>
<td>32.38</td>
</tr>
<tr>
<td>MS103</td>
<td>826.54</td>
<td>837.58</td>
<td>812.05</td>
<td>825.39</td>
<td>689.76</td>
<td>48.00</td>
<td>46.97</td>
<td>47.49</td>
</tr>
<tr>
<td>MS104</td>
<td>587.69</td>
<td>709.09</td>
<td>764.10</td>
<td>686.96</td>
<td>526.77</td>
<td>31.15</td>
<td>33.60</td>
<td>32.38</td>
</tr>
<tr>
<td>MS105</td>
<td>423.85</td>
<td>502.42</td>
<td>497.44</td>
<td>474.57</td>
<td>340.68</td>
<td>30.63</td>
<td>14.33</td>
<td>22.48</td>
</tr>
<tr>
<td>MS106</td>
<td>805.00</td>
<td>831.82</td>
<td>782.05</td>
<td>806.29</td>
<td>641.21</td>
<td>66.28</td>
<td>51.78</td>
<td>59.03</td>
</tr>
<tr>
<td>MS107</td>
<td>548.46</td>
<td>597.58</td>
<td>630.77</td>
<td>592.27</td>
<td>489.50</td>
<td>54.80</td>
<td>52.50</td>
<td>53.65</td>
</tr>
<tr>
<td>MS108</td>
<td>488.08</td>
<td>618.18</td>
<td>649.49</td>
<td>585.25</td>
<td>387.40</td>
<td>51.03</td>
<td>32.68</td>
<td>41.86</td>
</tr>
<tr>
<td>MS109</td>
<td>493.46</td>
<td>604.55</td>
<td>606.92</td>
<td>568.31</td>
<td>579.27</td>
<td>30.57</td>
<td>30.57</td>
<td>30.57</td>
</tr>
<tr>
<td>MS110</td>
<td>845.38</td>
<td>856.97</td>
<td>820.51</td>
<td>840.96</td>
<td>692.13</td>
<td>84.23</td>
<td>74.20</td>
<td>79.22</td>
</tr>
<tr>
<td>MS111</td>
<td>375.38</td>
<td>447.27</td>
<td>374.36</td>
<td>399.01</td>
<td>581.36</td>
<td>32.80</td>
<td>11.03</td>
<td>21.92</td>
</tr>
<tr>
<td>MS112</td>
<td>645.38</td>
<td>625.76</td>
<td>711.54</td>
<td>660.89</td>
<td>677.69</td>
<td>47.27</td>
<td>31.97</td>
<td>39.62</td>
</tr>
<tr>
<td>MS113</td>
<td>674.62</td>
<td>784.24</td>
<td>687.18</td>
<td>715.35</td>
<td>528.87</td>
<td>50.97</td>
<td>52.63</td>
<td>51.80</td>
</tr>
<tr>
<td>MS114</td>
<td>480.38</td>
<td>515.45</td>
<td>523.85</td>
<td>506.56</td>
<td>546.19</td>
<td>47.63</td>
<td>41.37</td>
<td>44.50</td>
</tr>
<tr>
<td>School</td>
<td>AE</td>
<td>CE</td>
<td>FT</td>
<td>AO</td>
<td>ESS</td>
<td>ELA</td>
<td>Math</td>
<td>AA</td>
</tr>
<tr>
<td>--------</td>
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<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>MS115</td>
<td>720.77</td>
<td>746.67</td>
<td>796.67</td>
<td>754.70</td>
<td>625.20</td>
<td>80.37</td>
<td>76.63</td>
<td>78.50</td>
</tr>
<tr>
<td>MS116</td>
<td>573.08</td>
<td>563.03</td>
<td>618.72</td>
<td>584.94</td>
<td>532.81</td>
<td>38.63</td>
<td>25.43</td>
<td>32.03</td>
</tr>
<tr>
<td>MS117</td>
<td>396.92</td>
<td>263.64</td>
<td>328.97</td>
<td>329.84</td>
<td>539.11</td>
<td>24.67</td>
<td>10.30</td>
<td>17.49</td>
</tr>
<tr>
<td>MS118</td>
<td>517.31</td>
<td>553.94</td>
<td>542.82</td>
<td>538.02</td>
<td>633.86</td>
<td>19.00</td>
<td>5.90</td>
<td>12.45</td>
</tr>
<tr>
<td>MS119</td>
<td>476.92</td>
<td>625.76</td>
<td>685.90</td>
<td>596.19</td>
<td>584.78</td>
<td>52.90</td>
<td>36.47</td>
<td>44.69</td>
</tr>
<tr>
<td>MS120</td>
<td>140.38</td>
<td>23.03</td>
<td>83.33</td>
<td>82.25</td>
<td>147.24</td>
<td>22.90</td>
<td>16.00</td>
<td>19.45</td>
</tr>
<tr>
<td>MS121</td>
<td>654.62</td>
<td>787.88</td>
<td>815.90</td>
<td>752.80</td>
<td>653.81</td>
<td>67.77</td>
<td>64.37</td>
<td>66.07</td>
</tr>
<tr>
<td>MS122</td>
<td>596.92</td>
<td>612.73</td>
<td>671.79</td>
<td>627.15</td>
<td>546.46</td>
<td>43.33</td>
<td>34.83</td>
<td>39.08</td>
</tr>
<tr>
<td>MS123</td>
<td>566.92</td>
<td>559.39</td>
<td>634.62</td>
<td>586.98</td>
<td>647.51</td>
<td>42.05</td>
<td>40.60</td>
<td>41.33</td>
</tr>
<tr>
<td>MS124</td>
<td>512.69</td>
<td>543.94</td>
<td>519.23</td>
<td>525.29</td>
<td>579.27</td>
<td>40.90</td>
<td>27.42</td>
<td>34.16</td>
</tr>
<tr>
<td>MS125</td>
<td>577.69</td>
<td>684.24</td>
<td>805.13</td>
<td>689.02</td>
<td>668.77</td>
<td>61.27</td>
<td>48.13</td>
<td>54.70</td>
</tr>
<tr>
<td>MS126</td>
<td>717.31</td>
<td>834.24</td>
<td>788.46</td>
<td>780.00</td>
<td>704.99</td>
<td>66.93</td>
<td>62.83</td>
<td>64.88</td>
</tr>
<tr>
<td>MS127</td>
<td>631.92</td>
<td>656.67</td>
<td>714.36</td>
<td>667.65</td>
<td>649.34</td>
<td>49.50</td>
<td>48.47</td>
<td>48.99</td>
</tr>
<tr>
<td>MS128</td>
<td>653.08</td>
<td>823.64</td>
<td>709.49</td>
<td>728.73</td>
<td>750.66</td>
<td>53.47</td>
<td>56.10</td>
<td>54.79</td>
</tr>
<tr>
<td>Mean</td>
<td>572.51</td>
<td>626.36</td>
<td>642.46</td>
<td>613.78</td>
<td>583.54</td>
<td>48.93</td>
<td>41.37</td>
<td>45.15</td>
</tr>
</tbody>
</table>

*Note.* The proficiency averages are out of 100; AE = academic emphasis; CE = collective efficiency; FT = faculty trust; AO = academic optimism; ESS = enabling school structures; ELA = English language arts; AA = academic achievement.

The scaled scores were interpreted by comparing the school’s score with a typical set of schools. The scores have been standardized to a mean of 500. These Michigan middle school scores can be viewed through a normal distribution, as described by Hoy (n. d.):

- If the score is 200, it lower than 99% of the schools.
• If the score is 300, it is lower than 97% of the schools.
• If the score is 400, it is lower than 84% of the schools.
• If the score is 500, it is average.
• If the score is 600, it is higher than 84% of the schools.
• If the score is 700 it is higher than 97% of the schools.
• If the score is 800 it is higher than 99% of the schools.

The means for the 29 participating Michigan middle schools were above the average of 500 as seen in the last row of Table 6. Of the three factors that created the latent variable AO, two of the variables, CE and FT, were higher than 84% of the schools, while AE was in the average range. When these factors were averaged for each school in the creation of the AO scaled scores, the overall participant mean of 613.78 placed this sample at above 84% of the schools. The ESS scaled scores functioned the same way and with an average participating school mean of 583.54.

Examination of the academic achievement of the participating schools found the ELA achievement mean was 48.93% of students proficient; this was above the state average in Michigan of 43.43%. In mathematics, the achievement of the participating schools was 41.37% proficient, also above the state average of 34.55%. Overall, in Michigan, the state academic achievement mean for the same grade span was 39.04% proficient compared to the study schools mean of 45.15%.

*Descriptive statistics of the middle level strategy implementation.* The information in Table 7 shows the overall statistics from the schools surveyed regarding their implementation of the various middle level strategies examined in this study.
Table 7

Descriptive Statistics for Interdisciplinary Teaming

<table>
<thead>
<tr>
<th>Factor</th>
<th>Descriptor</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interdisciplinary teams</td>
<td>Yes</td>
<td>52%</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>48%</td>
</tr>
<tr>
<td>Level of Team Effectiveness</td>
<td>Learning to be Effective</td>
<td>14%</td>
</tr>
<tr>
<td></td>
<td>Beginning to be Effective</td>
<td>21%</td>
</tr>
<tr>
<td></td>
<td>Highly Effective</td>
<td>21%</td>
</tr>
<tr>
<td>Number of Teachers on a Team</td>
<td>2</td>
<td>7%</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>3%</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>24%</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>15%</td>
</tr>
<tr>
<td>Hours Team Members Plan</td>
<td>Less than 2 Hours/week</td>
<td>41%</td>
</tr>
<tr>
<td></td>
<td>2-4 Hours/week</td>
<td>17%</td>
</tr>
<tr>
<td></td>
<td>More than 4 Hours/week</td>
<td>3.4%</td>
</tr>
</tbody>
</table>

Note. n = 29

In the school demographic form, interdisciplinary teaming was defined as more than having the same set of students; highly effective teams work together to meet student needs, integrate learning experiences, and make a significant difference in the educational lives of their students. Fifteen schools (52%) reported that they had interdisciplinary teaming, and 14 schools (48%) reported they did not. Teams from the schools with interdisciplinary teaming, ranged along a continuum from learning to be effective, beginning to become effective, and highly effective. As seen in Table 7, these interdisciplinary teams are made up of a varying number of teachers with the majority of schools having larger teams comprised of four to
five teachers. The schools reported on the amount of time team members spend planning together each week with the majority spending less than 2 hours, which is the least amount of time indicated on the survey.

The school questionnaire also explored the middle level structures in place for students. The factors considered included the following: an advisory program, schedule of classes, and exploratory programs. As seen in Table 8, 41% of the schools had no advisory program; more than half of participating school programs were structured so that students spent at least 1 hour/week on a school wide curriculum or on individually developed teacher lessons. The school day for nearly all of the students comprised six to eight class periods of 45-60 minutes in length. Blocked core or non-core classes were not an important factor in the middle level structure of participating schools. All of the schools reported having exploratory programs for students with a range of three to 43 program choices.
### Table 8.

**Descriptive Statistics of School Structure Elements**

<table>
<thead>
<tr>
<th>Factor</th>
<th>Descriptor</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advisory Program Time</td>
<td>At least 1 hour/week with school wide curriculum</td>
<td>17%</td>
</tr>
<tr>
<td></td>
<td>Less than 1 hour/week with school wide curriculum</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>At least 1 hour/week with individual teacher curriculum</td>
<td>14%</td>
</tr>
<tr>
<td></td>
<td>Less than 1 hour/week with individual teacher curriculum</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>Less than once a week</td>
<td>7%</td>
</tr>
<tr>
<td></td>
<td>No Advisory Program</td>
<td>41%</td>
</tr>
<tr>
<td>School Schedule</td>
<td>6-8 periods of 45-60 minutes</td>
<td>93%</td>
</tr>
<tr>
<td></td>
<td>Core classes blocked; non-core may or may not be</td>
<td>7%</td>
</tr>
<tr>
<td></td>
<td>Other options</td>
<td>0%</td>
</tr>
<tr>
<td>Number of Exploratory Programs</td>
<td>Mean</td>
<td>9.5</td>
</tr>
<tr>
<td></td>
<td>Minimum</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Maximum</td>
<td>43</td>
</tr>
</tbody>
</table>

Note. $n = 29$

Information regarding preparation for middle level teaching was also examined.

Table 9 shows the number of participating schools and percentage distribution of teachers in the 29 schools who hold middle level specific certification and those who are receiving specific middle level training. A majority of the 29 participating schools reported a relatively
low percentage (0-20%) of the staff with middle level certificates or middle level training. Interestingly, the next greatest percentage of participating schools reported that a high percentage (81 to 100%) of staff held middle level-specific certificates or received training. Whether teachers have certificates or training in middle level concepts seemed to be a have or have-not situation within individual schools.

Table 9

*Descriptive Statistics of Middle Level Teacher Preparation*

<table>
<thead>
<tr>
<th>Number of schools</th>
<th>Teachers with middle level-specific certificate</th>
<th>Percentage of 29 Participating Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>n = 29</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>0-20%</td>
<td>48%</td>
</tr>
<tr>
<td>6</td>
<td>21-40%</td>
<td>21%</td>
</tr>
<tr>
<td>2</td>
<td>41-60%</td>
<td>7%</td>
</tr>
<tr>
<td>1</td>
<td>61-80%</td>
<td>3.4%</td>
</tr>
<tr>
<td>6</td>
<td>81-100%</td>
<td>21%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Teachers who received middle level-specific training</th>
<th>Percentage of 29 Participating Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>0-20%</td>
</tr>
<tr>
<td>1</td>
<td>21-40%</td>
</tr>
<tr>
<td>9</td>
<td>41-60%</td>
</tr>
<tr>
<td>1</td>
<td>61-80%</td>
</tr>
<tr>
<td>9</td>
<td>81-100%</td>
</tr>
</tbody>
</table>
Examining data for Research Question 2: Does the school’s implementation of middle level strategies and STW status affect the level of AO and ESS at a middle school? This research question focused on the relationships, if any between the independent variables of STW status and middle level strategies and AO and ESS, the dependent variables (see Figure 2).

Multiple linear regression was used to examine which independent variables, if any, had the most impact upon either AO or ESS and to test the relationship between those cultural and structural aspects of middle schools with implementation of middle level strategies and STW status. The findings are shown in Figure 3.
Figure 3. Regression Analysis with Study Variables
*p < .05, **p < .01, ***p < .001

A number of the middle level strategies were shown to have a significant relationship with either AO and/or ESS. The percentage of teachers with middle level training in the past three years had a highly significant positive relationship to both AO (β = 1.204, p = .001) and ESS (β = 1.523, p = .001). A highly significant inverse relationship was found between the percentage of teachers with a middle level certificate and both academic optimism AO (β = -1.404, p < .001) and ESS (β = -2.740, p < .001).

Highly effective teams and STW status also had a significant inverse relationship with AO (β = -0.718, p = .005) (β = -0.909, p = .004) respectively. Enabling school structures had a highly significant inverse relationship with highly effective teams (β = -1.183, p = .001) and STW status (β = -2.107, p = .001). School schedule had a significant relationship to
AO (β = .549, p = .003) and ESS (β = .375, p = .004). Having an advisory program at school had a highly significant relationship to ESS (β = 1.080, p = .001). The number of teachers on an interdisciplinary team had an inverse highly significant relationship to ESS (β = -.731, p = .001) and the number of hours a team worked together had a significant inverse relationship with AO (β= -.468, p = .007).

In the search for interaction variables, two were found to have interesting effects upon this portion of the model. One interaction variable was the product of highly effective teams with the percentage of teachers who held a middle level certificate. Although these two variables both had inverse relationships with AO and ESS, the interaction variable created with them, HighEff_MLCert, had a highly significant positive relationship with AO (R² = .950; β = 1.195, p < .001) and ESS (R² = .949; β = 2.278, p < .001).

The second interaction variable was the product of STW status and the percentage of teachers who held a middle level certificate; these two variables also had an inverse relationship with both AO and ESS. This interaction variable, STW_MLCert, also had a highly significant positive relationship with AO (R² = .919; β = 1.076, p = .001) and ESS (R² = .887; β = 1.871, p = .001) respectively. It is interesting to note that both of these interaction variables involved the middle level variable, percentage of teachers who held a middle level certificate, and in both cases the interaction variable had a positive relationship rather than the inverse relationship of its parent variables.

This data indicated that schools with middle level training, an advisory program, and teachers who spend larger blocks of time with students have higher AO and a more ESS. Schools that had lower AO and ESS with higher levels of teachers holding middle level
certificates reported having larger highly effective teams who met often and hold a STW status. It is tempting to suggest certain strategies support AO and ESS while others do not, but the data from interaction variables suggests a more complex relationship. For schools, the combination of teachers holding middle level certificates with highly effective teams and STW status had a strong relationship to high level of AO and ESS.

School climates that focus on academics, relationships with parents and students, and view themselves as effective have elements related to a focus on middle level student needs and effective teaming.

**Examining data for Research Question 3. Do the factors of AO, ESS, STW status, and middle level strategy implementation influence the academic achievement of students in math and reading?** This research question focused the emphasis of the factors of AO, ESS, STW status, and middle level strategy implementation on the specific academic achievement of students in math and reading. The relationships between these variables are shown in Figure 3.

The examination of relationships tested the independent variables of AO, ESS, STW status, middle level strategies, and the dependent variable of academic achievement, which is the average of the school achievement results in mathematics and ELA. Results from the regression analyses addressed each of the academic variables—overall academic achievement, mathematics achievement, and ELA achievement. These regressions revealed a highly significant relationship between AO and each of the academic variables—AO with academic achievement ($R^2 = .887; \beta = .786, p < .001$); mathematics ($R^2 = .592; \beta = .770, p < .001$), and ELA ($R^2 = .601; \beta = .775, p < .001$). No significant relationship was found with ESS.
An interaction variable, the product of AO and ESS was found to have a significant impact on the model. The regression with academic achievement as the dependent variable found a model that predicted 67% of the variance ($R^2 = .669$).

Academic achievement had a highly significant relationship with the interaction variable, AO_ESS, ($\beta = 1.293, p < .001$), and a significant inverse relationship appeared with ESS ($\beta = -.601, p = .017$). This same pattern played out with mathematics achievement and the interaction variable, AO_ESS, which had a highly significant relationship ($R^2 = .661; \beta = 1.274, p < .001$), and ESS had a significant inverse relationship with mathematics achievement ($\beta = -.582, p = .021$).

For the dependent variable, ELA, 63% of the variance ($R^2 = .630$) was explained with a highly significant relationship to the interaction variable, AO_ESS ($\beta = 1.267, p < .001$), and a significant inverse relationship to enabling school structures ($\beta = -.602, p = .023$). A positive highly significant correlation was found between AO and ESS ($\beta = .743, p < .001$). It appears that ESS works indirectly through AO in affecting the academic achievement, as the interaction variable, AO_ESS, had a greater positive impact upon all three of the dependent academic variables than AO alone.

These findings show that students achieve academically within schools with high levels of ESS and AO. A positive effect is observed when school structures empower teachers to meet student needs and a climate exists that is focused on academics, relationships, and the staff shares a belief in their efficacy.

**Examining the relationship of SES with school demographic and academic factors.** The relationship of SES, as represented by the percentage of students receiving free
and reduced lunch was examined with school demographic factors, middle level strategies, and STW status. Findings showed that a suburban location has a highly significant relationship with the percentage of teachers who have received middle level training in the past three years ($\beta = .564, p = .001$) and a significant relationship to the percentage of teachers who held a middle level certificate ($\beta = .497, p = .012$).

The percentage of students receiving free and reduced lunch had one significant positive relationship to the percentage of teachers who held a middle level certificate ($\beta = .420, p = .030$) and three inverse relationships with middle level variables: highly effective teams ($\beta = -.542, p = .030$), the number of teachers on an average team ($\beta = -.479, p = .071$), and a school having interdisciplinary teams ($\beta = -1.290, p = .015$).

A rural location had a significant positive relationship with highly effective teams ($\beta = 1.084, p = .028$). The number of teachers at a school also had a significant positive relationship to highly effective teams ($\beta = 1.103, p = .015$), whereas the number of students at a school had an inverse relationship with interdisciplinary teaming ($\beta = -.730, p = .070$).

The researcher found three interesting interaction variables in the relationship of SES with school demographic and academic factors. The product of a suburban location and the percentage of students receiving free and reduced lunch had a larger, more significant relationship to the percentage of teachers who held a middle level certificate ($\beta = .525, p = .003$) than a suburban location ($\beta = .497, p = .012$) alone.

The interaction of the number of students with the percentage of students receiving free and reduced lunch had a larger, more significant relationship with the percentage of teachers who had received middle level training in the past three years ($\beta = .554, p = .006$)
than the percentage of free and reduced alone (β = .420, p = .030). The interaction variable, 
#students FR also had a stronger positive relationship to interdisciplinary teaming (β = 1.302, 
p = .022) than either of the significant inverse relationships with percentage of free and 
reduced (β = -1.290, p = .015) or number of students (β = -.730, p < .070) alone.

The relationship between the percentage of students receiving free and reduced lunch 
and the three academic achievement variables was examined. For each of the three variables, 
a highly significant inverse relationship was found—overall academic achievement (β = - 
.639, p < .001), ELA achievement (β = -.595, p = .001), and the greatest impact was upon 
mathematics achievement (β = -.944, p < .001).

**Conclusion**

The examination of the demographic factors and their effect on middle level 
strategies revealed a pattern that large, suburban schools, even when they had a high 
percentage of students receiving free and reduced lunch, had a higher percentage of teachers 
with middle level certification, and had teachers who had received middle level training in 
the past three years. These larger schools also had more interdisciplinary teaming and highly 
effective teams. Rural schools had highly effective teams, if there was not a high percentage 
of students receiving free and reduced lunch at that school. The larger schools were more 
able to maintain these middle level structures even with higher levels of poverty among the 
students.

Some middle level strategies were also found to have significant relationships with 
AO and ESS. Both were positively related to the percentage of teachers who received middle 
level training and school schedule. Several other middle level strategies had significant
inverse relationships with AO and ESS until they were combined to form interactive variables. These interactive variables were found to have highly significant positive relationships to both AO and ESS. The combination of the percentage of teachers who had middle level certification with both attainment of STW status and also with highly effective teams was interesting. The finding suggested that this combination of factors was important in supporting the cultural and structural pieces measured by AO and ESS.

The analysis of the data in this study confirmed the latent factor of AO created through the combination of AE, CE, and FT. Academic optimism significantly predicted all three achievement areas, overall academic achievement, ELA and mathematics. ESS did not have any significant relationship to achievement until it was combined with AO as an interaction variable. This interaction variable had a stronger more significant relationship to all three achievement areas than SES.
Chapter 5: Conclusions

This chapter includes a brief summary of the current study, statement of the problem, purpose, and the methods. Pertinent findings are discussed and related to prior research. Suggestions are offered for future studies in middle level structure, culture, strategies, and their relationship to academic achievement.

Summary of the Study

Adolescence is a trying time for children, as they experience rapid physical, emotional, and social growth (Caskey & Anfara, 2014). Middle level theory posits that this exceptional time requires a distinctive whole school support system to assist students in moving positively through the transitions (Erb, 2005). The middle level concept promotes certain strategies for middle grades schools to employ for this purpose, yet school systems frequently struggle to fully implement these well-known strategies (Erb, 2005). After 50 years, the middle school movement appears stalled (Schaefer et al., 2016), yet schools are still seeking ways to raise student achievement. Developing a better understanding of how these variables interact provided information about the structure and culture of effective middle schools.

This study examined middle school aspects through the lens of Bandura’s (1986) social cognitive theory with its triadic reciprocality of internal factors or beliefs, behavior, and environmental influences. The internal factors examined were academic optimism or beliefs of teachers, a latent variable formed by academic emphasis (AE), collective efficacy (CE), and faculty trust in parents and students (FT), as measured by the academic optimism (AO) survey (Hoy et al., 2006) and the enabled school structures (ESS) survey, which
examined the flexibility within the bureaucratic system of the school (Hoy & Sweetland, 2001).

The behavior within the school was represented by the middle school’s attainment of STW status or lack thereof, the implementation of middle level concept, and the academic achievement scores of the students, as measured by their state M-Step exams in the areas of mathematics and English language arts (ELA). The environmental influences were examined through the socioeconomic status (SES) of the students, as measured by the percentage receiving free and reduced lunch, the location of the school, its size, and demographics. Examining the interaction of these variables in this study, expanded the understanding of how these climate and structural aspects affect student achievement at the middle school level.

Very little research is extant that examines the interaction of middle schools with AO and ESS. Most previous studies have shown that AO and ESS positively affect academic achievement in spite of SES within high schools (Hoy et al., 2006) and elementary schools (McGuigan & Hoy, 2006; Wu et al., 2013).

The overall purpose of this study was to explore the relationship between middle level strategies, ESS, AO, and academic achievement. This study was guided by three research questions. The first examined the level of academic optimism AO, ESS, middle level strategy implementation, and academic achievement at each school in the study.

The second examined how the school’s implementation of middle level strategies and STW status affected the level of AO and ESS. The last research question examined how the factors of AO, ESS, STW status, and middle level strategy implementation impacted the academic achievement of students in math and reading.
Data were collected through two survey instruments, a demographic form, and information directly from the Michigan Department of Education’s (MDE) MiSchoolData website. Of 190 Michigan middle school principals invited, 29 responded. Their schools were situated in different areas of the state. Principals completed a demographic form and distributed the combined AO and ESS survey to teachers in their schools. The electronic survey was completed by 210 teachers. Academic achievement was measured by the state-mandated M-Step test in mathematics and ELA. Testing data was obtained from the MiSchoolData website for each of the 29 participating schools. The data were tabulated as school level variables; these school level variables were used for comparison in the study.

**Discussion of Findings**

The following section will discuss the findings from this study, connections to previous research, and how the findings fit in the overall scope of the project. The variable interaction model shown in Figure 3 has several levels. The findings tie the layers together.

**Academic optimism (AO).** Analysis of the data in this study confirmed the latent factor of AO. A confirmatory factor analysis found that the three component parts of AO, CE, FT, and AE loaded strongly at .983, .975, and .962, respectively. This is congruent with other research that also found the latent variable AO formed from those three variables (Hoy, et al., 2006; Smith & Hoy, 2007; Bevel & Mitchell, 2012). Considering the significance of AO in the results of this study, the solid formation of the latent variable from the three variables is important as it aligns with previous research and supports the findings in this study.

Overall academic achievement as well as ELA, and mathematics achievement were all significantly predicted by AO in this study. This finding is consistent with previous
research studies of Hoy et al. (2006), Smith and Hoy (2007), and Bevel and Mitchell (2012), who also examined the relationship between AO, academic achievement, and SES. The previous researchers found that AO predicted academic success in mathematics, ELA, or both, even beyond the effects of SES. However, those studies were conducted in high schools (Hoy et al., 2006) or elementary schools (Smith & Hoy, 2007; Bevel & Mitchell, 2012). This study extended these findings to middle schools, connecting the positive effects of AO on academic achievement across the K-12 continuum.

As AO has been found to be a factor affecting academic achievement across K-12, it is a variable to be examined in a school’s culture, as staff look to increase students’ academic success. The survey used to determine a school’s level of AO would provide helpful information to administrators and teachers regarding where they might focus their school improvement efforts. The three variables that compose AO focus on different areas, and the work to strengthen that area would be different for each. For example, if the lowest variable measured was CE, a school would want to work on team building and trust between staff. On the other hand, if the area in need was FT, the staff could focus on building connections and understanding with parents and students. Each approach would have a different emphasis while strengthening AO overall to have a positive effect on academic achievement.

**Enabling school structure (ESS).** In this study, ESS did not have a significant relationship to academic achievement until it was combined with AO as an interaction variable. This interaction variable had a stronger, more significant relationship to all three achievement areas than SES, as measured by the percentage of students who received free and reduced lunch. This finding resonates with results of other research studies involving ESS and AO.
A prior study of elementary schools found that ESS was correlated to AO (McGuigan & Hoy, 2006). Another study of elementary schools in Taiwan found that AO acted as a hub for academic achievement and ESS affected academic achievement indirectly through AO (Wu et al., 2013). Researchers Mitchell et al. (2016) conducted a study involving both elementary and middle schools. They found that ESS was positively correlated to AO and that AO was positively correlated to academic achievement in elementary schools but did not find a strong connection in middle schools. Those results suggest that ESS sets the stage for AO.

Previous researchers also found that ESS either supports or works through AO to affect academic achievement. These findings align with this study that found the interaction variable of ESS and AO more strongly predicted academic achievement than either variable alone or than SES. This study found that ESS alone showed no direct effect on academic achievement but increased the effect seen by AO, which suggests that ESS works through or in support of AO. One prior study did examine middle schools, but findings were inconclusive (Mitchell et al., 2016). This study found a connection in the middle school setting, which suggests a more flexible bureaucratic structure is important in supporting the AO beliefs of the staff, which in turn positively affect academic achievement.

For administrators and teachers striving to improve students’ academic achievement, findings in this and other studies indicate that examining the bureaucratic structures in addition to examining the three variables in AO could provide key information for greater support of AO and positively affect academic achievement.

**Middle level strategies.** This study found that some middle level strategies have significant relationships with AO and ESS. Both were positively related to the percentage of
teachers who receive middle level training and the type of school schedule. A strong positive relationship was shown as the percentage of teachers who had received middle level training in the past three years increased. This finding aligns with literature on the middle level concept that promotes the understanding by teachers of the specific social, emotional, and academic needs of rapidly changing adolescents (Eichhorn, 1966; Lounsbury, 1984; George & Alexander, 1993; NASSP, 2006).

This study also found that as students spent increasingly larger blocks of time with teachers, the positive connection with AO and ESS also increased. Picucci et al. (2004) found block scheduling as a common element in successful middle schools in high poverty areas.

In this study, several other middle level strategies had significant inverse relationships with AO and ESS until they were combined to form interactive variables. These interactive variables were found to have highly significant positive relationships to both AO and ESS. The combination of the percentage of teachers who had middle level certification with both attainment of STW status and with highly effective teams is worthy of further examination. Findings suggested that these two combinations were important in supporting the cultural and structural pieces measured by AO and ESS. This current study found that none of these three middle level aspects were significant on their own but were significant in combination.

To have achieved STW status, staff of a middle school has worked collaboratively with the guiding documents (see Appendix C; National Forum to Accelerate Middle Grades Reform, n. d.). Highly effective teams engage in similar collaboration to meet student needs. The combination of this strong collaboration and the training provided by middle level certification also aligns with findings from previous research. The literature consistently records that in addition to the need for specific training, it is not enough to have teachers
arranged into teams; they must successfully collaborate to develop the climate, lessons, and the emotional connections students need (Erb, 2005; NASSP, 2006; Peterson, et al., 1996; Jackson et al., 2000).

The connection between middle level strategies with AO and ESS is not surprising as there is much resonance between the underlying ideals. AO emphasizes three key areas within a school culture: (a) focus on academics, (b) sense of efficacy within the staff, and (c) strong positive relationships with parents and students. ESS supports a less rigid bureaucratic school structure that favors teachers’ ability to adjust for student success. These strategies are also found in middle level theory. Teachers with a middle level certificate or received middle level training would be better able to understand adolescents’ needs and have learned strategies to address them. This knowledge would be necessary for a school to attain STW status and for teams to be highly effective.

When teachers or teams of teachers have larger blocks of time with students rather than a more rigid schedule, they can adjust as necessary; thus, there is a connection between school schedule with AO and ESS. Block scheduling provides a less rigid bureaucratic structure, and teachers can feel more effective with the ability to make changes they deem necessary for student success.

Research on middle level practices has found that greater academic achievement was attained when middle level concept was implemented with fidelity (Felner et al., 1997). This study found that certain middle level strategies have a strong positive relationship to AO and ESS and a strong connection between academic achievement and AO with ESS in a supporting role. The findings suggest that knowledgeable implementation of middle level
strategies enhances AO, and when this is supported by ESS, it is likely the students will benefit through higher academic achievement.

Survey instruments developed to gather data related to both AO and ESS have been shown to be valid in several studies. These surveys could be used by administrators and staff as a method of critical examination to determine potential areas for improvement. The connection found in this study between a schools’ STW status and the teachers’ middle level knowledge base to AO and ESS also suggested the use of the STW rubrics as additional tools to examine the school elements that support middle level learners.

**Demographic factors.** The examination of the demographic factors in this study and their effect on middle level strategies showed that large suburban schools, even when they had a high percentage of students receiving free and reduced lunch, had a higher percentage of teachers with middle level certification, and teachers who had received middle level training in the past three years. This study found that larger schools were more likely to have interdisciplinary teaming and highly effective teams. Rural schools had highly effective teams if the percentage of students receiving free and reduced lunch was not high.

The larger schools were more able to maintain these middle level structures, even with higher levels of poverty among the students. This is not a surprising finding, as larger districts have lower overhead costs than smaller districts (Arsen, Delpier, & Nagel, 2019). Both large and small districts have administrative costs, which in small districts are spread across fewer students and take a larger portion of their foundational allowance. A rural district is more likely to conduct the entire district program in one or two buildings, and teachers may have responsibilities across different grade levels. This would make it more difficult to justify targeting limited professional development time or funds toward just one
level of schooling. Further, larger schools tend to be in urban or suburban areas more likely to be located near colleges of education and intermediate school districts, both of which may have the ability to provide middle level training for larger numbers of teachers in these more populated areas.

Austin’s (1997) three-year longitudinal study, Middle Start, revealed that Michigan’s middle grades students were losing ground because schools had insufficient resources to support student needs. Jackson and Davis’s (2000) report, Turning Points 2000, examined studies and found that although progress had been made in growing middle level practice, there were still many schools not implementing these practices, especially in poor urban and rural schools. The findings from this study suggested that poorer urban schools in Michigan have made some steps toward middle level implementation and that even rural schools have made strides unless located in areas of high poverty. The Jackson and Davis (2000) report suggested some growth in the understanding and spread of middle level concept during the past 20 years.

**Theoretical Implications**

**Bandura’s (1986) social cognitive theory.** The framework of this study is Bandura’s social cognitive theory, which argues that human agency is the drive to act for a specific purpose, and self-efficacy is the belief that a person has some control over their own functioning. Social cognitive theory posits triadic reciprocity between behavior, personal or internal, and environmental factors (Bandura, 1986). Bandura’s concept of collective beliefs, for this study was applied at the institutional level in this case, individual schools. It is seen in this study as a theory of collective human agency with school factors, which focused on the interaction of personal or internal factors, environmental factors, and behavior or
outcomes of schools as individual entities. The connection between the triadic factors in social cognitive theory and this study’s variables is seen in a repeat of Figure 1.

*Figure 1. Factors of Bandura’s (1986) social cognitive theory. Adapted from Bandura, *Social Foundations of Thought and Action: A Social Cognitive Theory*, 1986, p. 24.*

Social cognitive theory has previously been applied to an individual’s behavior; this study connects the theory to collective school level factors, examining the school as the individual entity. In Bandura’s theory (1986), the personal factors are what people think, feel, and believe, which affect how they behave. An organization, such as a school, exemplifies these personal beliefs through measures such as AO and ESS. AO is a latent variable which measures the CE, AE, and FT. ESS measures the faculty’s belief in their ability to make timely, collective decisions for the benefit of the students (Hoy & Sweetland, 2001).
According to Bandura (1986), “The amount of imbalance of social power depends on the extent to which people exercise the influence that is theirs to command” (p. 452).

ESS is a collective concept of this balance in power of a school organization. The environmental influences in this model are factors not within control of the school staff, such as school size, SES of its students, school’s location, and other demographics. At times, these environmental conditions can create restraints on behavior, so it is important to consider their influence on behavioral and cognitive factors (Bandura, 1986).

Bandura (1986) explained that which of the three social cognitive factors is dominant depends on the relative strengths of the other two factors. This tension between the three factors can be seen when considering the effect SES often has upon the academic achievement of students. Socioeconomic factors have been shown to be powerful predictors of student achievement in schools (Hopson & Lee, 2011). This strong parallel between SES and academic achievement shows how SES can be a strong influential factor in this triadic model.

The results of this study have shown that the belief factors of AO and ESS, especially when combined, can be more influential within the model, thus moderating the effect of SES. Strengthening the belief systems of the schools strengthened the academic achievement, one of the behavior factors in the model. This strengthening of the other two factors in the social cognitive theory brought greater balance to the constant tug-of-war that educators fight against the influence of SES upon the academic achievement of their students.

Examining other findings from this study in terms of the social cognitive framework helps to explain the relationships found. In this study, a strong relationship was found between certain middle level strategies, particularly middle level training, middle level
certification, highly effective teams, and STW status with AO and ESS. These middle level factors were particularly effective when combined into interaction variables. As the behavioral factors combined, they strengthened their position within the model.

The same effect was found to be true with certain environmental factors. The interaction variables of suburban/free and reduced and number of students/free and reduced both had strong positive relationships with the middle level strategies of middle level training, middle level certification, and interdisciplinary teaming. These middle level strategies are in turn the same factors that were so strongly correlated with AO and ESS, which had a strong influence on academic achievement. Recognizing the connections between all three areas of the social cognitive model shows how these relationships function in this study.

The underlying collective beliefs of the staff in their ability to be effective, in emphasizing academics, in trusting their students and families, and in their ability to act effectively establish a base upon which they can choose and enact positive behaviors, middle level strategies that meet their students’ needs. The reciprocal nature of the social cognitive model is seen in the middle level factors shown to be strongest in this study.

The influence of teachers with middle level certifications or who have received middle level training could be viewed as establishing foundational beliefs among the staff that ultimately form the collective beliefs of AO and ESS. This back and forth influence of behavior upon beliefs and beliefs upon behavior models the reciprocal nature of the social cognitive theory and how it might work at the organizational level. The influence of environmental factors upon both behavior and beliefs can be seen in this study as well. The
strong positive and inverse relationships between SES and other demographic factors was established in this study, connecting all three factors of social cognitive theory.

**Implications for Practice and Recommendations**

Schools are complicated systems that involve many moving parts, each with connections to other parts (Fidan & Balci, 2017). Changing any one part creates a ripple effect across the system; thus, understanding the system, much less changing it to create different outcomes, can seem impossible. The system is complicated by its connections to other complex systems. A school’s ties to the community, the background experiences of the staff, the outside influences of government policy, social change, and shifting school finance are further complications in the environment as school leaders work to keep their schools competitive (Bandura, 2001; Johnston & Williamson, 2014; Fidan & Balci, 2017). The mission may seem simple—educate the students—but the reality is anything but simple. The challenge for school leaders is how to move a complex, constantly shifting organization forward to educate the students. A school leader needs information about the organizational activities and interactions to manage a complex and dynamic system (Johnston & Williamson, 2014; Fidan & Balci, 2017). Applying Bandura’s (2001) social cognitive framework, as done in this study, assists in putting the various moving parts into three interwoven categories: behavior, beliefs, and environment (Bandura, 2001). This sorting of influences allows a school leader to see the system at work and where change is possible. Beliefs can direct behavior, behavior can affect our beliefs, and while throughout, the external environment can affect both behavior and beliefs (Bandura, 2001). Tension between these factors creates the differences between educational organizations. How this dynamic system affects students’ academic achievement is important, as educational leaders strive to
provide the best possible outcomes for their students and face tough accountability consequences if they fail (Johnston & Williamson, 2014).

A strategic leader makes sense of the complex system that they work to improve and creates a vision for the future of the organization (Johnston & Williamson, 2014). The complex system of a school cannot be completely controlled by a leader; thus, small autonomous teams of teachers can be empowered to meet student needs (Fidan & Balci, 2017).

The AO and the ESS surveys provide data about belief systems from the teachers’ position, essentially rooting out their level of belief in being able to effect change. From the current study and from previous research, these two instruments have been applied across the K-12 system in a number of studies with fairly consistent results (Hoy et al., 2006; McGuigan & Hoy, 2006; Smith & Hoy, 2007; Bevel & Mitchell, 2012; Wu et al., 2013; Mitchell et al., 2016). The findings across these studies show that an ESS provides a foundation for AO. AO has been found to be a strong positive influence on student academic achievement, even stronger than SES. Thus, leaders looking to create positive change at a school might begin by collecting the information provided by the AO and ESS surveys. This data can lead to system change that empowers teachers to make decisions, or builds better rapport between teachers, the students, and their parents, strengthening the AE in the building, or the collective belief in the school’s efficacy. Through gaining an understanding of the system, leaders decrease the complexity, allowing teachers to understand the system and how they can innovate to meet student needs (Fidan & Balci, 2017).

Although the sample size was small, this study found connections between the AO and the ESS with teachers understanding of middle level strategies either through
certification programs or professional development. Connections were also found between internal school beliefs and the behavior or action of being a STW. It makes sense that to effectively work with adolescents, one must understand them. A leader needs to develop a clear vision collaboratively, so the various innovative teacher teams have shared purpose for their work (Johnston & Williamson, 2014; Fidan & Balci, 2017). This study found significance in the relationship of teacher knowledge of middle level theory, highly effective teams, AO, ESS, and academic achievement. A principal who collaborates with staff to create a shared vision of meeting adolescent needs, empowers teacher teams to innovate, and embed AO into the culture, and thus may achieve better academic outcomes for students (Fidan & Balci, 2017). The connections in this study suggested that an enabled middle school structure allows teachers knowledgeable about their adolescent students’ needs to make decisions for the benefit of the students. Findings also suggested that middle schools need a climate of AO that trusts the students and parents, a culture of AE, and a strong sense of CE throughout the school.

The STW rubrics summarize the information about middle level best practices into an instrument that schools can use to analyze their organization, their structures, and their beliefs as related to middle level theory (National Forum to Accelerate Middle Grades Reform, n. d.). The rubrics focus on four categories: (a) organizational structures and processes, (b) academic excellence, (c) developmental responsiveness, and (d) social equity. A middle school leader could use the information from the ESS and the AO survey to analyze the functioning of the system. The STW instrument could further examine middle level specifics to track the progress of the shared vision. This information would be very useful, as greater knowledge of the system creates greater capacity to innovate for change
(Fidan & Balci, 2017). Shrinking school finances, less access to professional development time, and increasing pressure to raise achievement requires a focused approach (Johnston & Williamson, 2014). Through understanding the system, building a climate and culture that supports teacher teams focused on achieving a shared vision of meeting middle level student needs, a leader can guide a building toward greater academic achievement.

Factors of Limitations and Possible Future Studies

Small sample size. The small sample size for this study limited the ability to draw broad conclusions. The size of the sample restricted data analysis to a series of multiple regressions rather than the option of structured equation modeling (SEM) that would have allowed for clearer data-driven connections across the variables of this study. Findings could be more broadly applicable if the pool of respondents were drawn from multiple states. In that case, additional intervening variables might be identified and evaluated in term of the student achievement outcomes.

This study involved 29 middle schools with the minimum data to be included in the study. A larger sample size of 80 to 100 schools would have been a better size pool from which to have drawn conclusions. In addition, the minimum data for a school’s participation was set at four surveys, which limited the information, as the surveys completed may not have been representative of the overall faculty. These data restrictions could have an effect upon the conclusions drawn from the data set. A larger number of participating schools, each with a more substantive portion of their staff completing surveys would have provided a stronger basis for any conclusions drawn.

The sample also included a majority of the STW in Michigan, which were included based on the school’s emphasis of middle level strategies. Their inclusion in the study with a
small sample size could have affected the findings, especially in regard to how prevalent the use of middle level strategies is among Michigan middle schools. A larger sample size would have included a more balanced ratio of STW and schools without that designation. Future research would do well to increase by a greater representation of programs, the number of sites, and the number of surveys completed at each site.

**The data collection process.** Collecting data from principals while also requesting their assistance in obtaining teacher surveys was a two-level collection process that complicated this study’s data collection process. Finding a simpler method of collecting data from both the principal and teachers remove this barrier, perhaps allowing for greater participation and a larger, more representative sample size contributing to conclusions about the relationship among the variables in the study. By simplifying the process, it may be easier in the future to obtain data from more random schools, which would broaden the sample’s scope making it more representative.

**Professional relationships.** Characteristics of the sample population in this study may have offered limitations. Although many different Michigan middle school principals were invited to participate, the response rate was better among principals with whom the researcher shared a connection through one of several middle school organizations, and those principals may have encouraged more teacher’ survey responses from their schools. Thus, the researcher-principal relationship of shared membership in organizations may have made the sample less random. Limitations may also be seen in the sample’s averages, as the data showed that the sample was slightly higher than average in some areas, suggesting that it is not completely representative.
**Geographic and social limitations.** Restricted ability to generalize could also be attributed to the sample being limited to schools within the State of Michigan, as conditions affecting the schools in Michigan may not be present in other states, thus limiting generalizability to middle schools elsewhere. A simpler data collection would also allow for the research to extend beyond the boundaries of one geographic area, which would also allow findings to be more broadly generalized.

This study looked at the difference between rural and suburban/urban schools, when there was a higher level of economically disadvantaged students. As economic distress is just one way in which students are marginalized in academic settings, further research could also examine other marginalized populations and how the existence of ESS, AO, and/or different middle level strategies affects the academic achievement of traditionally marginalized students.

**Data collection instruments.** The instruments used to collect data may have contributed to limitations. The questionnaire completed by principals in this study was constructed with use of some questions from a large national study and some questions created by the researcher. This study was the first to use the instrument as constructed. The instrument was tested in a pilot conducted at one school. It is possible that principals answering the questions may have interpreted them differently or even possibly being confused over terms used. In future use, the instrument could be piloted at several school, which would allow the researcher to collect data about the participants understanding of the terms and questions to be more thoroughly vetted.

The AO and ESS survey instrument completed by the participating teachers in this study were used in a number of previous studies and found to produce consistent results
making the data and conclusions much more reliable. Understanding the questions and terms in the same way is important in obtaining consistent results. Through consistent results, a researcher can draw stronger connections between variables.

**Choice of variables.** This current study examined a number of middle level strategies and their relationship to ESS, AO, and academic achievement. Connections were found between a few middle level strategies, and the identified cultural and structural factors. By conducting action research on only one or two of the middle level variables in the study, the influence of one variable upon another could be analyzed in greater detail. For example, a researcher could measure the AO and ESS at several schools, then work with staff to implement a middle level strategy such as high level teaming.

Future studies could use the STW rubric to analyze the school for which middle level strategy to focus on, thereby supporting all variable choices with an instrument that could be used for both pre- and post-measurements. Examining any changes with the STW, the ESS, AO, or even any of the factors that construct AO such as AE, CE, or FT, would further our understanding of the relationship between these variables within middle schools. From such pinpointed knowledge, specific strategies or structures for application could emerge within middle schools.

**Research approach.** The quantitative approach in this study examined the interactions between the many variables under investigation. From this study, several interaction variables emerged, two involved the percentage of teachers who had middle level certification, combined with either attainment of STW status or with highly effective teams. A qualitative study could build upon the findings of this study by focusing on these interaction variables. The use of a qualitative approach would give a researcher the
opportunity to deeply examine what is occurring when these variables are combined and how their combination is affecting other variables. Understanding the functioning of these interaction variables could identify the root of the differences found when the variables are in combination versus in isolation.

**Anticipated outcomes.** An overarching purpose in this current research study was to gain a greater understanding of how the culture and structure of middle schools affects the strategies employed to benefit student academic achievement. Future research could examine how an ESS and AO affect schools’ ability to meet needs of students instead of or in addition to academic achievement. Educators may consider brain development, socio-emotional needs, or the effects of trauma. Studying the factors that allow teachers to more ably make change to meet the needs of students in these realms would also be relevant.

This study confirmed the finding from previous research that an ESS supports AO, which positively influences academic achievement. Do teachers experiencing these positive structures in turn employ similar ones within their classrooms? In considering next steps, the researcher wonders if teachers are empowered through an ESS to make changes, does this lead to classrooms where students benefit through increased opportunities for voice themselves? This question combined with earlier considerations of marginalized students, suggests ideas about what structures better support culturally relevant teaching?

This study was an initial examination of the relationship between these factors in middle schools. Clearly, there are a number of areas for further study in building a greater understanding of how the interplay of these factors affect schools and thereby student experiences and outcomes.
Conclusion

This study focused on young adolescent development, middle grades education, and the underlying supporting structures that allow students to achieve academically. A whole child approach to middle level education is stated in This We Believe (Erb, 2005), a guide for effective middle grade teachers’ understanding of the young adolescent, middle level practices, and professional development. The whole child approach requires a deeper look, and better employment of appropriate strategies. This study approached this larger picture to better understand the entire system.

By examining the results of this study through the lens of Bandura’s (2001) social cognitive theory, a larger view of the interplay of beliefs, behavior, and environmental influences upon the education of middle level students emerged. This view showed the importance of taking into the account the relationship between these factors when working to improve a middle level school for the students’ benefit. All parts of the system are important; the factors cannot be affected unless their interrelationship is understood. This need suggests an improvement focus based upon building the necessary culture and structure for middle level teacher teams to innovate to meet their students’ needs. For teacher teams to be successful, they must first wholly understand their students—who they are, where they come from, and the myriad of developmental areas that are part of a growing human being (Johnston & Williamson, 2014; Fidan & Balci, 2017). It is only through this knowledge that educators may truly understand all of their students, even those traditionally marginalized in society. Teachers may then develop appropriate strategies to foster positive growth in these ever-changing adolescents.
These ideas are supported in the findings of this study. Findings showed that the environmental factors of free and reduced with school size and location had a significant relationship with middle level certification, middle level training, and interdisciplinary teaming. These middle level strategies or behaviors at the school in turn had a significant relationship to AO and ESS, which were beliefs within the school. This study supported previous findings that AO supported by ESS had a greater effect upon academic achievement than SES.

Too often a middle school is defined by the middle level structures or strategies employed, regardless of their actual effectiveness. The results of this study show that it is more complex than simply employing a few middle level strategies to effect positive results for young adolescents. It is extant on the staff to first examine the interplay of deeper factors at each individual locale in order to fully understand what is occurring at each school. Taking into consideration the deep underlying factors and working to positively develop them will provide fertile ground for any middle school strategies to take root and support student growth. This deeper examination can be done systematically through an already existing school improvement process at schools. Through the use of the AO and ESS surveys, the deeper beliefs and underlying structures can be assessed and analyzed. Following this up by providing professional development about the diverse aspects of young adolescent physical, emotional, social, cultural, and behavioral growth, educators would have the vision and the tools necessary to make appropriate decisions and changes for their specific students and their needs. Teacher teams with the ability to meet the students where they are with a vision of the future and strategies to get the students there will be a powerful force. Certainly, positive outcomes for students will abound in such rich, knowledgeable, and
focused middle level environments allowing building principals to watch students leave campus knowing the school focused on meeting those students’ diverse needs.
References


Appendix A: Schools to Watch®

A School Self-Study and Rating Rubric

The Schools To Watch Program is a copyrighted protected program of the National Forum to Accelerate Middle Grades Reform.

The following Self Study and Rating Rubric may be used freely by any middle grades or secondary school to study and rate its practices. The Schools To Watch Program, which focuses on school improvement efforts characterized by a continuous trajectory toward success, is a voluntary, self-study and rating system.

The rubric is divided into four domains: Academic Excellence, Developmental Responsiveness, Social Equity, and Organizational Structures and Processes. Under each domain there is general criteria followed by concrete, expected examples of excellence. Self-rate each general and detailed component.

Your self-ratings should reflect your perceptions for your whole school, not for your specific classroom, grade level, or subject. The ultimate goal is to be consistently excellent and rate a well-evidenced score point 4 in every component (general and detail) of every section. Even when that ultimate goal is reached, a true high performing middle school will continue to seek ways to improve as new challenges arise.

A 4 in any general and detailed component means the practice is highly and completely implemented, systemic, and coherent in every classroom, by every teacher, across the school.

A 3 in any general and detailed component means there is a high degree of quality implementation that is systemic, but it may not be common or the highest quality in every classroom and by every teacher. It certainly is most.

A 2 in any general and detailed component means there is a high degree of evidence of quality implementation, but it is not consistent or systemic. A 2 also means that practices may include many teachers but not the majority. Programs may be too new to have gained acceptance.

A 1 in any general and detailed component means the practice may just have gotten started, (very immature), or is only partially implemented.

The rubric is divided into four domains: Academic Excellence, Developmental Responsiveness, Social Equity, and Organizational Structures and Processes.
## Appendix B: Academic Optimism (AO) Survey

### SAOS

**Directions:** Please indicate your degree of with each of the statements about your school from **strongly disagree** to **strongly agree**. Your answers are confidential.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Somewhat Disagree</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Teachers in this school are able to get through to the most difficult students.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2. Teachers here are confident they will be able to motivate their students.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3. If a child doesn’t want to learn teachers here give up.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4. Teachers here don’t have the skills needed to produce meaningful results.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5. Teachers in this school believe that every child can learn.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6. These students come to school ready to learn.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>7. Home life provides so many advantages that students are bound to learn.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8. Students here just aren’t motivated to learn.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9. Teachers in this school do not have the skills to deal with student disciplinary problems.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10. The opportunities in this community help ensure that these students will learn.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>11. Learning is more difficult at this school because students are worried about their safety.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>12. Drug and alcohol abuse in the community make learning difficult for students here.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>13. Teachers in this school trust their students.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>14. Teachers in this school trust the parents.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>15. Students in this school care about each other.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>16. Parents in this school are reliable in their commitments.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>17. Students in this school can be counted upon to do their work.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>18. Teachers can count upon parental support.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>19. Teachers here believe that students are competent learners.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>20. Teachers think that most of the parents do a good job.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>21. Teachers can believe what parents tell them.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>22. Students here are secretive.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**Directions:** Please indicate the degree to which the following statements characterize your school from **Rarely Occurs** to **Very Often Occurs**. Your answers are confidential.

<table>
<thead>
<tr>
<th></th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Very Often</th>
</tr>
</thead>
<tbody>
<tr>
<td>23. The school sets high standards for performance.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>24. Students respect others who get good grades.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>25. Students seek extra work so they can get good grades.</td>
<td>0</td>
<td>0</td>
<td>0</td>
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</tr>
<tr>
<td>26. Academic achievement is recognized and acknowledged by the school.</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>27. Students try hard to improve on previous work.</td>
<td>0</td>
<td>0</td>
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<tr>
<td>28. The learning environment is orderly and serious.</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>29. The students in this school can achieve the goals that have been set for them.</td>
<td>0</td>
<td>0</td>
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</tr>
<tr>
<td>30. Teachers in this school believe that their students have the ability to achieve academically.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

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Appendix C: Enabling School Structure (ESS) Survey

Form ESS

Directions: The following statements are descriptions of the way your school is structured. Please indicate the extent to which each statement characterizes behavior in your school from never to always.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Never</th>
<th>Once in a while</th>
<th>Sometimes</th>
<th>Fairly Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Administrative rules in this school enable authentic communication between teachers and administrators.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2. In this school red tape is problem.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3. The administrative hierarchy of this school enables teachers to do their job.</td>
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<td></td>
<td></td>
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<tr>
<td>4. The administrative hierarchy obstructs student achievement.</td>
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<td></td>
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<tr>
<td>5. Administrative rules help rather than hinder.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>6. The administrative hierarchy of this school facilitates the mission of this school.</td>
<td></td>
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<tr>
<td>7. Administrative rules in this school are used to punish teachers.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>8. The administrative hierarchy of this school obstructs innovation.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>9. Administrative rules in this school are substitutes for professional judgment.</td>
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<tr>
<td>10. Administrative rules in this school are guides to solutions rather than rigid procedures.</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>11. In this school the authority of the principal is used to undermine teachers.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. The administrators in this school use their authority to enable teachers to do their job.</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Appendix D: School Demographic and Middle Level Information

1. Name of School: __________________________________________
2. Middle Grades at the School (circle all that apply): 5 6 7 8 9
3. Number of Middle Grades Students: _________________________
4. Percent of Free and Reduced Lunch Students: _________________
5. Number of Teachers: __________________
6. School Location (circle one): Rural Urban Suburban
7. School is currently a School to Watch: Yes No

Interdisciplinary teaming is more than having the same set of students; highly effective teams work together to meet student needs, integrate learning experiences, and make a significant difference in the educational lives of their students.

8. Do you have interdisciplinary teaming in your school? Yes No
9. If you have interdisciplinary teams, which is common in your school:
   ¶ Most teams are learning to be an effective team
   ¶ Most teams are beginning to become effective
   ¶ Most teams in our school are highly effective
10. What is the typical number of teachers on an interdisciplinary team in your school?
    2 3 4 5 6
11. In a typical school week, how many hours do team members spend working as a team during their planning times within the school day? This refers to time spent planning not time teaching together for classroom instruction.
a. Typically, team members spend less than two hours a week working together
b. Typically, team members spend two to four hours a week working together
c. Typically, team members spend more than four hours a week working together

12. Advisory programs are designed as proactive support to assist middle level students develop academically, socially, and emotionally. Which statement best describes the advisory at your school?
   a. Students spend at least 1 hour a week working with an assigned group using a schoolwide curriculum
   b. Students spend less than 1 hour a week working with an assigned group using a schoolwide curriculum
   c. Students spend at least 1 hour a week working with an assigned group using individual teacher made lessons
   d. Students spend less than 1 hour a week working with an assigned group using individual teacher made lessons
   e. Advisory lessons occur less than once a week throughout the school year
   f. There is no advisory program

13. Which of the following best describes your school’s schedule?
   a. **Daily disciplinary schedule**: 6-8 periods of 45-60 minutes in length that has students move from teacher to teacher for different subjects every day
   b. **Daily interdisciplinary schedule**: core classes are blocked for a team of teachers and non-core classes may or may not be grouped as a block of time.
c. **Alternating daily disciplinary block schedule**: 4 periods of 75-100 minutes that students move through with separate teachers teaching different subjects and have an alternate set of 4 classes the following day.

d. **Alternating daily interdisciplinary block schedule**: 4 periods of 75-100 minutes with two or more teachers working together to deliver instruction. The students have an alternating four classes on the following day.

e. **Self-contained classroom schedule**: A schedule that has one teacher who teaches most or all of the subjects to a small group of students.

14. Exploratory programs provide the opportunity to experience a variety of content areas outside the basic core curriculum of math, English, social studies, and science.

   How many exploratory options are available to students in your school? _______

15. What percent of the teachers in your school hold a teaching certification specifically related to middle level education?

   a. 0-20% 21-40% 41-60% 61-80% 81-100%

16. What percent of the teachers in your school participated in training specifically related to middle level education within the past three years?

   a. 0-20% 21-40% 41-60% 61-80% 81-100%
Email received: April 18, 2018

Dear Vikki,

You have my permission to use the ESS and SAOS in your research.

Best wishes.

Wayne

WAYNE K. HOY
FAWCETT PROFESSOR EMERITUS IN
EDUCATION ADMINISTRATION
THE OHIO STATE UNIVERSITY
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7655 PEBBLE CREEK CIRCLE, #301
NAPLES, FL 34108
EMAIL: whoy@mac.com
PHONE: 239 595 5732
Appendix F: Consent letter

Dear Michigan educator,

I am conducting a survey about how the climate, culture, and strategies employed in Michigan middle schools affect student achievement. It would be very helpful if you would take ten minutes of your time to participate in this study. This survey is completely confidential and no personally identifying information will be recorded. Please feel free to contact Vikki Wandmacher, Ed.S., should you have any questions or concerns. If you have already participated in this important study, I appreciate your time.

To participate in this study, please go to:

Administrator Study Questionnaire Link

Teacher Study Survey Link

Informed Consent

What is the purpose of this study?
This project explores how the climate, culture, and strategies employed in Michigan middle schools affects student achievement.

What will I do in this study?
You will complete an online survey regarding the climate and culture in your middle school.

How long will it take me to do this?
The survey will take approximately ten minutes to complete.

Do I have to participate in the study?
Your participation in this survey is voluntary. You may refuse to take part in the research or exit the survey at any time without penalty. You are free to decline to answer any particular question you do not wish to answer for any reason.

Are there any risks of participating in the study?
There are no foreseeable risks involved in participating in this study other than those encountered in day-to-day life.

What are the benefits of participating in the study?
There are no direct benefits, however, it may benefit the larger community in terms of knowledge. This survey is intended to open the discussion regarding functional aspects of middle schools.

**Will anyone know what I do or say in this study (Confidentiality)?**
This survey is confidential, no personally identifying information such as your name, email address, or IP address will be collected. Those who review the results will not know who completed the survey. I will be utilizing Google Forms to distribute the survey and collect survey responses. The Anonymous responses button will be enabled.

**Who can I contact for information about this study?**
If you have questions at any time about the study or the procedures, you may contact, Vikki Wandmacher, Ed.S., [vwandmac@emich.edu](mailto:vwandmac@emich.edu), (989) 797-1814.
If you are not satisfied with the manner in which this study is being conducted, you may report (anonymously if you so choose) any complaints to the Institutional Review Board by calling (734) 487-3090, or addressing a letter to the Institutional Review Board, 200 Boone Eastern Michigan University, Ypsilanti, MI 48197.
Again, to participate in this study, please go to:

[Administrator Study Questionnaire Link](#)
[Teacher Study Survey Link](#)

Thank you for your consideration in this matter.
Appendix G: Institutional Review Board Approval

Oct 3, 2018 8:56 AM EDT

Victoria Wandmacher
Eastern Michigan University, Leadership and Counsel

Re: Exempt - Initial - UHSRC-FY18-19-79 Examining the interaction of academic optimism, enabling school structures, middle level practices, and academic achievement

Dear Victoria Wandmacher:

The Eastern Michigan University Human Subjects Review Committee has rendered the decision below for Examining the interaction of academic optimism, enabling school structures, middle level practices, and academic achievement. You may begin your research.

Decision: Exempt

Selected Category: Category 2. Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

Renewals: Exempt studies do not need to be renewed. When the project is completed, please contact human.subjects@emich.edu.

Modifications: Any plan to alter the study design or any study documents must be reviewed to determine if the Exempt decision changes. You must submit a modification request application in Cayuse IRB and await a decision prior to implementation.

Problems: Any deviations from the study protocol, unanticipated problems, adverse events, subject complaints, or other problems that may affect the risk to human subjects must be reported to the UHSRC. Complete an incident report in Cayuse IRB.

Follow-up: Please contact the UHSRC when your project is complete.

Please contact human.subjects@emich.edu with any questions or concerns.

Sincerely,

Eastern Michigan University Human Subjects Review Committee