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Comparing Student Achievement and School Climate in
Four-day and Five-day Secondary
Schools in Missouri

by

William Gordon Daleske

A Dissertation submitted to the Education Faculty of Lindenwood University

In partial fulfillment of the requirements for the

Degree of

Doctor of Education

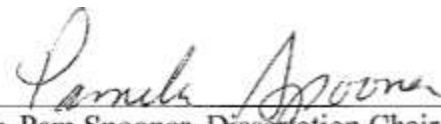
School of Education

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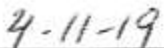
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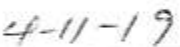
Dr. Pam Spooner, Dissertation Chair



Date



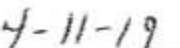
Dr. Shawn Poyser, Committee Member



Date



Dr. Randy Caffey, Committee Member



Date

Declaration of Originality

I do hereby declare and attest to the fact that this is an original study based solely upon my own scholarly work here at Lindenwood University and that I have not submitted it for any other college or university course or degree here or elsewhere.

Full Legal Name: William Gordon Daleske

Signature: William G. Daleske Date: 4-11-19

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Abstract

This quantitative study was conducted to determine whether a significant difference existed between secondary schools that observed the four-day school calendar and the five-day school calendar when comparing secondary schools' Annual Progress Report (APR) scores of academic achievement levels and attendance levels, as well as the secondary school teachers' perception of school climate. Five of the participating schools observed the four-day school week and five schools observed the five-day school week. The first portion of the study consisted of taking the average APR scores for attendance from both the four-day and the five-day schools and comparing them in an independent *t*-Test. The second portion of the study consisted of taking the average APR scores for academic achievement levels and comparing them in an independent *t*-Test. The final step in the study was to determine teachers' perceptions of school climate by administering the Organizational Climate Index, which was created by Hoy, Smith, and Sweetland (2002). The school climate portion of the study consisted of teacher participants from the 10 participating schools. This survey was administered to 70 teacher participants using Survey Monkey (Survey Monkey, 2018); 35 teachers were employed at a four-day secondary school, and 35 were employed at a five-day secondary school. The responses were scored and an average score was found for the both the four-day teacher responses and the five-day teacher responses. The scores were compared in an independent *t*-Test. The results of the *t*-Test in each case did not provide proof that a significant difference existed between the four-day school week and the five-day school week.

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Chapter One: Introduction

This study compares attendance rates, achievement level, and school climate between rural four-day school districts and rural five-day school districts. Prior research indicates a growing number of schools in Missouri have begun using the four-day school week (Finch & Turner, 2018). School districts in the United States established the four-day school week to battle budget constraints and ease tension on costs, such as transportation and utilities (Donis & Silvernail, 2009). Today, according to Finch and Turner (2018), school districts have been considering switching to the four-day school week for reasons other than saving money. Some school districts have used this type of calendar to recruit teachers, create time for more professional development, and to add time for teacher collaboration (Finch & Turner, 2018). Other benefits have been discussed by Weldon (2008) which include improved student and teacher attendance in school districts participating in the four-day week. Since 2011, 28 school districts in Missouri have participated in the four-day school week, with the number growing each year (MoDESE, 2018a). Finch and Turner (2018) noted three rural school districts in Southwest Missouri showed a change in parent and teacher perception of the four-day week from the first year of participation to present time. In a separate study, Finch, Turner, and Uribe-Zarian (2018b) found business leaders in the same school districts were evenly divided in their support of the four-day school week. According to Finch et al. (2018b), the reasons for the divisions in perception varied. Participants disagreed on the whether the four-day week improved the quality of education for students. Participants were also divided on whether the four-day week had a positive economic impact on the community (Finch et al., 2018b).

The study conducted by Finch and Turner (2018) included the examination of data from school districts that were participating in the four-day week for no shorter than a three-year period to determine student achievement, as well as, parent and teacher perceptions. Data collected to determine student achievement were focused on student attendance in four-day schools and analyzed against the state's average attendance data from the Missouri Department of Elementary and Secondary Education (MoDESE, 2018a). Data in the form of standardized test scores on the Missouri Assessment Program (MAP) and End of Course Exams (EOC) was collected from school districts participating in the four-day school week, and the data was compared to state averages (MoDESE, 2018a) to determine if a pattern existed in school districts that have participated in the four-day school calendar, for no shorter than three years, when compared with the state average. Parent and teacher perception data was compared to these standardized test scores to determine if a pattern existed. Chapter One will include details surrounding the background of the study, the theoretical framework which was the foundation for the study, as well as the problem statement and purpose of the study, research questions and limitations of the study.

Background of the Study

The modern school calendar, in the form seen today, came into existence in the 1800s (DeNisco, 2015). For approximately the past 150 year's school districts in America have been following a school calendar based on the agrarian calendar (DeNisco, 2015). According to DeNisco (2015), the agrarian school calendar was developed to allow students the opportunity to be out of school to coincide with planting and harvesting seasons. While a great number of school districts in the United States have

followed the traditional school calendar, a number of districts across the country have been choosing to move to an alternative school calendar (DeNisco, 2015).

There were three options Missouri school districts had to choose from when considering school calendars (MoDESE, 2018a). The first option was the balanced calendar or year-round calendar which included shorter more frequent breaks in the schedule throughout the school year, causing the calendar to extend into the summer months (Kelsey, 2016). Second was the most common option available, the traditional five-day school calendar, which is used by most school districts in the state of Missouri (MoDESE, 2018a). Finally, the four-day week calendar, where districts close the building for one day of the week and lengthen the school day to meet the requirements laid out by the state department of education (Finch et al., 2018a).

An example of a school district in Missouri that adopted the balanced calendar was the North Kansas City School District (Wallace & Potts, 2015). Wallace and Potts (2015) wrote, the North Kansas City School District, specifically Crestview Elementary implemented a summer calendar to increase academic opportunities for students. Kelsey (2016) discussed the year-round school calendar and the benefits it provided to students and teachers. Specifically, Kelsey (2016) noted the more frequent breaks as an academic benefit because it helped to narrow the gap on summer learning loss. Finch et al. (2018a) found fewer examples of public schools utilizing the balanced school calendar compared to those using the four-day week schedule.

The four-day week has become a trend in recent years among many school districts across the United States (Finch et al., 2018a). In 2008, the National School Boards Association estimated 100 school districts across the country were participating in

the four-day week (Weldon, 2008). Cummings (2015) offered 42 out of 115 districts in Idaho had transitioned to the four-day week; a number that has spiked in the past seven years. In recent years, Missouri has seen growth in the number of school districts moving to a four-day week (MoDESE, 2018a). The MoDESE listed 26 Missouri school districts that have currently implemented a four-day week schedule (Missouri Department of Elementary and Secondary Education [MoDESE], 2018a). Of the schools in Missouri participating in a four-day week, all were rural school districts (MoDESE, 2018a). Richert (2016) confirmed the four-day week was taking place in mostly rural school districts throughout the country. Richert (2016) stated, the majority of districts using a four-day week were in small communities where the school district administrators' schedules accommodated the students' extra-curricular activities and work schedules.

The four-day school week has had an impact on districts in other ways. In the recent past, the four-day week calendar was adopted by many schools to battle budget constraints (Rosenberg, 2015). The actions of school districts during the Great Depression provided a practical example (Finch et al., 2018a). Cummings (2015) discussed how school district leaders across the country opted to utilize shortened weeks to help reduce operating costs. In the 1970s, the cost of operating school districts increased again due to the Arab Oil Embargo (Cummings, 2015). Rosenberg (2015) found an Arizona superintendent saw the four-day week as an opportunity to cut utility costs by approximately 17%. The same superintendent projected approximately a 16% savings in transportation costs for the district as a result of implementing this new operating schedule (Rosenberg, 2015). While cutting the number of school days per week by 20% was substantial, it did not directly result in a 20% savings for any of the

school districts. Rosenberg (2015) noted many school districts would continue to have extra-curricular activities taking place when schools were not in session, as well as teachers taking the opportunity to prepare for class without students in the halls. Today, many superintendents have been faced with budget concerns, sometimes resulting in the cutting of programs, and the four-day week has provided a possible solution to reducing regular operating costs for the school districts (Finch & Turner, 2018).

Other school districts found the alternative schedules, such as the four-day week could provide advantages in other ways. Cummings (2015) noted, superintendents in western states used the four-day week as a recruitment tool for districts wishing to attract high quality teachers, as well as a tool to help retain teachers. The superintendent of schools in Homedale, Idaho, mentioned he received a greater number of applications for teaching positions as a result of implementing the four-day school week (Cummings, 2015). Another educator from the same school district, described the four-day week as an incentive for teachers and staff to stay with the district, despite being able to earn a higher salary in other school districts (Cummings, 2015).

Staff perceptions of the four-day week and its influence as an incentive to move into a district or stay with a school district seemed to vary from district to district (Cummings, 2015). According to Cummings (2015), teachers in Homedale, Idaho, were able to utilize the school day scheduled without students to further their individual and collective professional development. However, the superintendent of schools in Council, Idaho, described the four-day week as too compressed and an addition to an already busy schedule for parents and students (Cummings, 2015). Cummings (2015) also noted one

teacher reported seeing an increase in students who were more tired and hungry at school since the implementation of the four-day week.

Finch et al. (2018a) authored a study to determine school staff perceptions of the four-day week. As part of the study, Finch, et al. (2018a) attempted to learn whether teachers who had their own children in school supported the four-day week as compared to those who did not have children in the district. Data related to teacher perceptions were collected during the 2015-2016 school year using a 17-item survey instrument. The return rate was 41.97% (Finch et al., 2018a). Finch et al. (2018a) found generally employee perceptions of the four-day week were positive. Most respondents agreed the four-day week improved morale among staff. (Finch et al., 2018a). Many teachers agreed the four-day week had a positive impact on what was being taught in their classrooms (Finch et al., 2018a). The results of the study varied on whether a significant difference in perception existed based on staff members having students enrolled in the school district (Finch et al., 2018a).

The effect the four-day week may have on student success must be of primary concern to school districts considering this change (Finch et al., 2018a). Frances, O'Reilly, and Tharp (2015) conducted a study between 2013 and 2017 to determine the effects the four-day week would have on standardized test scores. The authors found within the first two years of implementation, the school districts' scores increased (Frances et al., 2015). After two years, the scores fell to lower than those of school districts following the traditional five-day week calendar (Frances et al., 2015). Cummings (2015) suggested there was little quantitative proof the four-day week hurt or

helped student achievement. Reports were inconsistent, some school district leaders have seen scores increase, while others have seen scores decrease (Cummings, 2015).

Some schools have seen student attendance increase with the move to the four-day school week (Weldon, 2008). Weldon (2008) reported a Webster County, Kentucky school, that had been ranked 115th in state attendance out of 174 districts, improved to ranking 61st out of 174 districts after moving to the four-day week. An eastern Nevada school district showed an attendance improvement of 40% and staff attendance increased by 50% when the school district moved to a four-day week (Weldon, 2008).

Weldon (2008) outlined how moving to a four-day week could improve a district. Finch and Turner (2018) described the increase in teacher approval which can lead to improved morale within a school district. According to Bolman and Deal (2013), these were structural changes school district leaders made in the attempt to create a positive impact on their districts.

Theoretical Frameworks

John Hattie (2012) said, “Teachers’ beliefs and commitments are the greatest influence on student achievement, over which we can have some control” (p. 25). Hattie (2012) also described effective teachers as being passionate and inspired, along with having a good mindset. Teacher morale was defined by Gruenert and Whitaker (2015) as the measure of happiness among school staff. Teacher morale could be affected by many factors and could change during the course of the day or the course of the year (Gruenert & Whitaker, 2015). Morale has had a direct effect on school culture of many schools according to Gruenert and Whitaker (2015). As Gruenert and Whitaker (2015) further discussed, morale could also have an effect on the climate in some schools. Lowered

morale could contribute to negativity and create a collective negative state of mind in which people in the school feel they need to act in a certain way or fashion (Gruenert & Whitaker, 2015). As mentioned by Hattie (2012), mindset was one of the key components teachers must have, in order to be effective. The four-day school is one option district leaders have explored to build a positive school climate and improve teachers' mindset and morale (Weldon, 2008).

Schools choosing to move from a traditional five-day week to the four-day week may be undertaking a major shift in the structuring of the school. Bolman and Deal (2013) described different reasons for an organization to shift from traditional scheduling to alternative school calendars. One reason was environmental shifts (Bolman & Deal, 2013). Schools today have been dealing with shifts in students' assessment scores, declining budgets, and recruiting and retaining quality staff (Finch et al., 2018a). Bolman and Deal (2013) specified overloading workers was as one of the reasons to consider restructuring operations due to the potential effects on the morale of workers. For this reason, school district leaders should consider how their school districts are structured to move forward and improve student success (Finch et al., 2018a). As district leaders restructured their districts for school improvement by moving to the four-day school week, improved climate was one of the byproducts seen by many district leaders (Weldon, 2008). The four-day week and its potential benefits has proven to be one avenue schools were venturing toward to ensure continued student success (Finch et al., 2018a).

School climate and school culture are terms used to describe two different things within schools (Gruenert, 2008). Gruenert (2008) described school climate as the mood or

morale of the people who work at or attend a school. School culture was described as a common set of expectations held by a group of teachers (Gruenert, 2008). Maxwell, Reynolds, Lee, Subasic and Bromhead (2017) found school climate had a significant impact on student achievement. Positive teacher morale, school culture, and climate required an ongoing effort from district leaders (Gruenert & Whitaker, 2015).

The four-day school week could be a factor in improving teacher morale and improving school climate (Weldon, 2008). Hattie (2003) noted teacher morale as one of the major factors related to teacher effectiveness. Gruenert and Whitaker (2015) made the connection between teacher morale and school climate, discussing how the two greatly impacted one another. Cummings (2015) noted creating and maintaining a positive climate in schools had an impact on teacher effectiveness and teacher retentions in many school districts. Finch et al. (2018a) described teacher retention as one of the main reasons for moving to the four-day week. Cummings (2015) discussed teachers in Idaho had more time to collaborate, more time to cover lessons in more detail, and stayed with lower paying jobs to keep the four-day week schedule due to the improved school climate.

The framework for this study was how a change in the structure of the school district calendar impacted student learning. Bolman and Deal (2015) noted that a change in a structure of an organization can have an impact on employees in a variety of ways. Specifically, Bolman and Deal (2015) described the ways structural changes can affect organizational climate and the morale of workers. Hattie (2003) noted, how important teacher mindset and morale was to teacher effectiveness in the classroom. The aim of

this study was to determine the impact of the structural change of a school district moving to the four-day school week on student achievement.

Problem Statement

Budget shortfalls have caused school superintendents to explore avenues outside the traditional five-day school calendar, while allowing them to keep in line with state requirements of attendance minimum, test scores, and student growth (Donis & Silvernail, 2009). Moving to a four-day week has been a trend in school districts in the state of Missouri in the recent past according to the Department of Elementary and Secondary Education (MoDESE, 2018a). As of 2018, 26 school districts in the state have participated in the four-day week (MoDESE, 2018a). As many school districts moved to the four-day week during the early 2000s there developed a need for relevant and recent research to determine whether moving to a non-traditional school calendar, such as the four-day week was in the best interest of students in the state of Missouri. Since 2011, the number of school districts that have participated in the four-day week has grown from one school to 26. (MoDESE, 2018a). The trend has not been unique to the state of Missouri (Finch et al., 2018a).

Weldon (2008) stated the four-day week has been in place in other parts of the country for many years. School district leaders have given different reasons for moving to a non-traditional calendar, such as improved teacher retention (Cummings, 2015). School budget was another reason to move to the four-day school week (Weldon, 2008). Rosenberg (2015) wrote some school superintendents reported experiencing cost savings of 20% from transportation budgets. Other district administrators found staff positively supported the adoption of the four-day week (Cummings, 2015). Finch et al. (2018a)

found improved morale among teachers who worked in school districts that participated in the four-day school week.

The MoDESE has put in place rules to help guide school districts deciding to move to a four-day week (MoDESE, 2018a). In 2011, MoDESE (2018a) mandated school districts that have shown a decline in performance for two consecutive years to return from the non-traditional calendar back to the five-day traditional school calendar. School district leaders who determined their school district to be a candidate for the four-day week have a number of things to consider (Finch et al. 2018a). The most important thing to consider was whether the transition was good for students (Weldon, 2008).

This study was conducted to compare student achievement and teacher perception of school climate between select school districts in the state of Missouri. Data was collected from 10 school districts that participate in the four-day school week. Data was also collected from 10 school districts that participated in the traditional five-day school week. According to Gruenert and Whitaker (2015), positive school climate played a vital role in student achievement. Hattie (2012) described teacher morale as essential to teacher effectiveness in the classroom. The structural changes of the four-day week may provide a way for school district leaders to improve culture and morale in districts. However, research is needed to determine how school districts participating in the four-day school week compare with school districts participating in the traditional five-day school week.

Purpose of Study

The purpose of this study was to investigate how school districts using a calendar with a four-day school week compared to school districts using the traditional five-day

school week. Specifically, how students' attendance rates and academic achievement levels compared with this calendar change in selected Missouri schools was investigated. In addition, school climate in selected rural Missouri schools was investigated to compare the way school climate differed in schools with different school calendars. Students' achievement data was collected as determined by student attendance rates and achievement levels. Achievement data was collected from each school districts' Annual Performance Report (APR), provided by the MoDESE (2018a). The APR is the yearly measurement of student achievement given to Missouri schools by the MoDESE (2018b). Data on the participating school districts' free and reduced lunch percentages to account for the socioeconomic status of students was also provided. Data on teachers' perceptions of school climate from the four and five-day week school districts was collected using the Organizational Climate Index (see Appendix A) (Hoy, Smith, & Sweetland, 2002).

A quantitative study was designed to examine whether a significant difference existed between attendance rates in rural four-day school districts and rural five-day school districts. Whether a significant difference existed between student achievement levels in rural four-day school districts and rural five-day school districts was also examined. Finally, whether a significant difference existed in the school climate between rural four-day school districts and rural five-day school districts was determined.

Significance of the Study

This quantitative study provided a detailed look at whether a significant difference existed between students' achievement and school climate in participating rural secondary schools in Missouri that observed different school calendars. The

specific focus was on Missouri school districts that participated in the four-day school week and school districts who participated in the five-day school week. Finch et al. (2018a) described positive responses school districts in southwest Missouri received from the public before moving to a four-day week. Finch et al. (2018a) reported teachers having an overwhelmingly positive view of the four-day week before the school district changed to the four-day schedule. Finch et al. (2018a) also reported parents of students being in favor of the four-day week before the school district made the transition to the non-traditional school calendar. Weldon (2008) discussed the way some superintendents utilized the four-day week to recruit and retain teachers. Maxwell et al. (2017) discovered a relationship existed between school climate and student achievement. Teacher morale and school climate, according to the Gruenert and Whitaker (2015), played an important role in the continued development of positive school culture as a whole.

This study was significant, as it utilized a quantitative approach to determine whether a significant difference existed between students' achievement, as measured by attendance rates and achievement levels, based on the four-day school week or the five-day school week. The aim of this study was also to determine whether a significant difference existed between teachers' perceptions of school climate, depending on the school calendar. This study could provide school leaders who are exploring a move to a four-day school week with useful data to use when making critical decisions affecting the good of the school district. This study is significant due to the novelty of the phenomenon and the limited available data existing in the literature on the topic of the four-day school week.

Research Questions and Hypothesis

The following research questions guided the study:

RQ1: Is there a significant difference in secondary schools' attendance scores on the APR between schools that participated in the four-day school week and the five-day school week?

H1_a: There is a significant difference in secondary schools' attendance scores on the APR between schools that participated in the four-day school week and the five-day school week.

H1_o: There is not a significant difference in secondary schools' attendance scores on the APR between schools that participated in the four-day school week and the five-day school week.

RQ2: Is there a significant difference in secondary schools' academic achievement level scores on the APR between schools that participated in the four-day school week and the five-day school week?

H2_a: There is a significant difference in secondary schools' academic achievement level scores on the APR between schools that participated in the four-day school week and the five-day school week.

H2_o: There is not a significant difference in secondary schools' academic achievement level scores on the APR between schools that participated in the four-day school week and the five-day school week.

RQ3: Is there a significant difference in organizational climate between schools that participated in the four-day and the five-day week?

H3_a: There is a significant difference in organizational climate between schools that participated in the four-day and five-day school week.

H3_b: There is not a significant difference in organizational climate between schools that participated in the four-day and five-day school week.

Study Limitations

One limitation of this study was the school districts chosen were only able to provide data for a limited number of years. Most school districts were new to the four-day week, which limited the sample of schools that would fit within the parameters of the study. The reason for this was that the four-day school calendar has only been allowed in Missouri by law since 2011 (MoDESE, 2018c).

Another limitation to the study was that the Organizational Climate Index (OCI) is a self-reporting survey. The possibility of that participants included bias in their responses to the survey exists. Participants may not have answered the survey openly and honestly.

An additional limitation of the study was school districts that participated in the four-day week tended to be smaller, rural school districts. This in turn led the researcher to choose school districts that participated in the five-day school week to be smaller, rural districts for the purpose of comparison. Due to the smaller number of districts of the study that could provide adequate data for the study, the researcher chose convenience sampling for the study. Also due to the limited number of districts, the sample of participants was self-selected. This type of sample can create bias in the study (Bluman, 2015). The small number of secondary schools that fit the criteria for the study resulted in an effect size of 1.6 for the first two research questions (Bruin, 2018).

Furthermore, another limitation was the survey collection instrument used by the researcher. The researcher was not able to ensure the responses would be spread evenly throughout the participating schools. This was due to the confidential nature of the collection methods of the study.

The final limitation disclosed was the researcher's experiences with the four-day school week. The researcher was a middle school principal in a rural school district that participated in the four-day school week. The researcher addressed this limitation by not participating in the study and not including the school in which he was employed in the study.

Study Assumptions

The assumptions made in this study were regarding the following topics: the sample size of schools that participated in the study, the participants in the study, bias of the participants in the study, the data used from the MoDESE (2018a) website, and the Organizational Climate Index (OCI) survey. The researcher's first assumption was that the number of four-day secondary schools included in the study provided an accurate sample of rural four-day schools in Missouri. It was also assumed the number of rural five-day secondary schools involved in the study provided an accurate sample of rural five-day secondary schools in Missouri.

In addition, it was assumed participants in the study would receive the informed consent letter and link to the survey from district leaders. Furthermore, it was assumed the participants would answer openly and honestly when completing the OCI. It was also assumed participants would have access to the internet and email in order to complete the survey for the study and would return their responses.

It was assumed the design of the study excluded bias from the researcher. By excluding himself, and the school at which he was employed, from the study bias was avoided in the study. Bias was described as designing a study to bring about a desired outcome (Fraenkel, Wallen, & Hyun, 2015).

An additional assumption noted during the study was that the MoDESE (2018a) website would be up to date and provide accurate APR data. The data collected was from 2015 and 2016 APR reports from 10 secondary schools. Five schools participated in the four-day school week and five schools participated in the five-day school week. Furthermore, it was assumed the APR scores would be an accurate representation of the sample schools' achievement levels and attendance rates for the school years of 2015 and 2016.

The final assumption made involved the use of the OCI. It was assumed the OCI would be the best instrument to use for this study because it provided a Likert scale response system that would assign quantitative value to teachers' perceptions of school climate. It was assumed that participants would be able to fill out the OCI by using the internet. It was assumed the online version of the OCI in Survey Monkey (2018) would provide accurate representation of the participants' perceptions of school climate in their individual secondary schools. It was also assumed that by categorizing the schools into one group of four-day school employees and one group of five-day school employees that the scores of the OCI would reflect teachers' perception of school climate for that particular school calendar.

Definition of Terms

The following terms were identified for the purpose of this study.

Academic achievement level score. Academic achievement level scores were described as the amount of points a school district received for academic achievement on the APR (MoDESE, 2018b).

Achievement press. Achievement press is a dimension of the Organizational Climate Index, in which teachers perceived their school and communities set high academic standards for students (Hoy et al., 2002).

Annual Performance Report. The Annual Performance Report (APR) is the report issued to Missouri school districts each year to measure performance (MoDESE, 2018b).

Attendance level score. The attendance level score is described as the amount of points a school received on the APR for attendance (MoDESE, 2018b).

Collegial leadership. Collegial leadership is a dimension of the Organizational Climate Index, in which teachers' perceptions of the way principals treated teachers was measured (Hoy et al., 2002).

Compressed workweek. The compressed workweek involved workers who worked longer shifts for fewer days of the work week (Wadsworth & Facer, 2016).

Convenience sample. A convenience sample is described as a sample that was available for a study (Fraenkel et al., 2015).

Critical value. Critical value is described as a value that indicated the critical region to be reached in hypotheses test (Bluman, 2015).

Five-day school week. The five-day school week consisted of a school calendar where students in school districts attended classes five days of the week (Finch & Turner, 2018).

Four-day school week. The four-day school was a school calendar option that consisted of four lengthened instructional days with a fifth day off (Donis-Keller & Silvernail, 2009).

Human resources. Human resources includes all employees within the organization (Bolman & Deal, 2015).

Institutional vulnerability. Institutional vulnerability is a dimension of the Organizational Climate Index, in which the extent of susceptibility of a school to outside parent or citizen groups was measured (Hoy et al., 2002).

Morale. Morale is defined as the measure of happiness of people in a school which had an impact on the schools' culture (Gruenert & Whitaker, 2015).

Organizational Climate Index. Organizational Climate Index (OCI) was developed as an organizational climate descriptive measuring instrument for schools (Hoy et al., 2002).

Organizational Climate Description Questionnaire. The Organizational Climate Description Questionnaire was developed as an organizational climate description instrument for schools (Hoy et al., 2002).

Organizational Health Inventory. Organizational Health Inventory (OHI) was developed as an organizational health descriptive measuring instrument for schools (Hoy et al., 2002).

Professional teacher behavior. Professional teacher behavior is a dimension of the Organizational Climate Index, which included measures of colleagues' competence and mutual cooperation and support (Hoy et al., 2002).

Rural school district. A rural school district is one that fits into three categories of fringe, distant, or remote based on the distance from an urban center (NCES, 2018).

Self-selected sample. A self-selected sample is described as a sample made up of participants who volunteered to participate in a study (Bluman, 2015).

School calendar. The school calendar described the days or hours a district was required to be in session (Finch et al., 2018a).

School climate. School climate referred to the mood or morale of teachers who worked at the schools and the students who attended it (Gruenert, 2008).

School culture. School culture was described as the common set of expectations a group of teachers in a building came to develop over time (Gruenert, 2008).

***t*-Test for independent means.** A *t*-test for independent means was used testing the means of two independent groups for a significant difference (Fraenkel et al., 2015).

Year-round school. Year-round school is a school calendar that requires teachers and students to attend school year-round where they receive two to three week breaks intermittently throughout the year (DeNisco, 2015).

Summary

In Chapter One, the researcher outlined the back ground of the study as well as the theoretical framework and the basic foundation of the study, including the three research questions which drove the study. Bolman and Deal (2015) described the effects a change in structure could have on climate and morale of employees. Gruenert and

Whitaker (2015) made the connection between morale and climate in school districts. Also, Hattie (2003) noted the relationship between teacher morale and effectiveness in the classroom. Missouri has seen a rise in the number of school districts changing their structured schedules and moving to a four-day school week calendar in recent years (MoDESE, 2018a). The purpose of the study was to determine how school districts using the four-day school calendar compared to school districts using the five-day school calendar. In Chapter One the researcher focused on these issues in the problem statement as well as the significance of the study, as well as the key terms which applied to this study. In Chapter Two a more in-depth review of the theoretical frameworks, which built the foundation of the study, as well as the background of the study will be provided. Chapter Two also contains a detailed literature review to provide a clearer understanding of the existing research related to this study.

Chapter Two: Review of Literature

Many school districts, faced with financial burdens made worse by the Great Recession of 2008, began looking for alternative school calendars that would allow these school districts to take advantage of financial savings (Richert, 2016). The body of literature on the topic of four-day school weeks was limited so many school districts began moving to this model without understanding the full implications the move would have on student achievement (Cummings, 2015). Finch et al. (2018a) noted a gap in the literature related to teacher perceptions of the four-day week and specifically how teachers felt this change affected student achievement. Finch et al. (2018a) suggested a need for additional research on this topic.

The review of literature in Chapter Two is comprised of several sections which provide an in depth look at the factors related to the business of maintaining school schedules in school districts and the implications associated with these schedule and student achievement. The first section presents the theoretical framework which was used to guide the study. The theoretical framework for this research study provided a detailed account of the relationships between the structural frameworks within organizations how these frameworks were related to and affected the morale and climate of a school and subsequently how these factors linked to student achievement. The chapter also included a review of literature connected to school climate and its possible effects on student achievement. The chapter thoroughly reviewed the instruments used by researchers to measure school climate. The research also reviewed the dimensions of school climate to provide context for the reader. In this chapter the researcher examined the historical evolution of calendars used by school districts up to the implementation of

the four-day week calendar. Finally, the chapter concluded with a review of the research focused on the four-day school week and the impact it has had on student achievement, student attendance rates, as well as teachers' and parents' perceptions of school.

Theoretical Framework

Theoretical Framework was defined as, "The theoretical approach that is used to structure a research study" (Fraenkel et al., 2015 p. 425). According to Fraenkel et al. (2015), researchers held different views of the world which guided how they approached research. Frankel et al. (2015) described quantitative researchers as believing the world could be approximated by careful study. Qualitative researchers tended to search for relationships between variables and the method became clearer as research continued (Fraenkel et al., 2015). In a mixed-methods study, the researchers' world views could cause them to view research through an advocacy lens, which would provide purpose to the research (Fraenkel et al., 2015). Rowlands (2005) described when building a theoretical framework, the importance of including a section of concepts and showing the relationship between them was crucial. School districts, like other organizations, had a structural frame component. The structural frame component was comprised of different members of the organization including leaders, managers, and workers (Bolman & Deal, 2013). Bolman and Deal (2013) explained structural changes could impact the human resources theoretical framework as well. The components of the human resource frame included the human workforce, hiring the right people, and keeping employees with the organization (Bolman & Deal, 2013).

When describing the structure of organizations, Bolman and Deal (2013) included the vertical coordination as a type of organizational structure. Vertical coordination in an

organization occurred when higher levels within the organization organized and coordinated the workplace by implementing policy and rules, as well as planning and controlling systems (Bolman & Deal, 2013). Typically, school districts fit into this type of structure (Bolman & Deal, 2013). Most school districts consist of a governing body, such as a board of education, followed by a district leader, or administrator, and then building level management (MoDESE, 2018a). The task of upper level management, executives, and supervisors in the vertical coordination model was to keep actions within the organization aligned with goals and benchmarks the organization had set (Bolman & Deal, 2013). Much like any other organization, the role school district leaders were charged with was to improve or maintain student achievement at a high level, which often included monitoring student attendance, teacher collaboration, and the recruitment of effective staff (Finch & Turner, 2018). The human resources in a school district as described by Bolman and Deal (2013) were the workers and faculty. Hattie (2012) wrote, these people will have a great impact on the success or failure of a school district.

John Hattie (2012) claimed attitudes and expectations of teachers was the differentiating factor between high quality teachers and low-quality teachers. Gruenert (2008) agreed with this comment stating, "If happy people truly perform better, then leaders must create conditions in which happiness thrives" (p. 57). Gruenert and Whitaker (2015) acknowledged maintaining teacher morale was one of the main keys to school climate and improving the attitudes of teachers. Maxwell et al. (2017) echoed those findings by describing the importance a positive school climate had on student achievement. Maxwell et al. (2013) further discussed student achievement and the

relationship found between staff perceptions of the school and the academic performance of students.

Bolman and Deal (2013) described environmental shifts as a scenario when some organizations should restructure. An example of an environmental shift within an organization could include workers who were distraught by long hours and low pay (Bolman & Deal, 2013). These types of restructuring effects could be felt by the human resources in the organization which could subsequently have an influence on employees' morale in any working environment (Bolman & Deal, 2013). In schools specifically, teachers' morale has been linked to retention and student performance (Gruenert & Whitaker, 2015). Some school districts faced with budget concerns, as well as increased teacher turnover and lagging student achievement, have sought an environmental shift and turned to alternative school schedules or four-day school week calendars as a way to combat these issues (Weldon, 2008). Finch and Turner (2018) discussed a plan for some Missouri schools to choose alternative school calendars as a means to provide more professional development for teachers, as well as a way to increase teacher retention and effective recruitment. Some Missouri school districts also were moving to a four-day school week calendar as a way to improve students' attendance rates (Finch & Turner, 2018). In all or most Missouri school districts, report cards, issued by the state department of education (MoDESE, 2018a), were based in part on student achievement as well as attendance and graduation rates. Attendance rates were established using the 90/90 rule set by MoDESE (2018a), which required 90 percent of students to be in attendance 90 percent of the time. (MoDESE, 2018a).

Another reason for restructuring was connected to administration (Bolman & Deal, 2013). Bolman and Deal (2013) stated, “The stagnant bureaucracy: An older, tradition-dominated organization with an obsolete production line” (p.87). This scenario could cause lower level workers to feel isolated and left out (Bolman & Deal, 2013). According to Weldon (2008) a structural change, such as a school district moving to a four-day week could also have an effect on teacher morale. As Bolman and Deal (2013) expressed, “At any given moment, an organization’s structure represents its best effort to align internal activities with outside pressures and opportunities” (p. 93). Many school district leaders have sought ways to advance their school districts in terms of student performance and have seized on opportunities to improve, for example by transitioning to a four-day school week (Weldon, 2008).

As many school district leaders and administrators have looked to move their districts forward to avoid the stagnation that could occur within an organization according to Bolman and Deal (2013), they have met with a gap in literature on this topic. This acknowledged gap supported a need for additional research in the area of student achievement and the most effective school calendar configurations (Cummings, 2015). According to Tharp, Matt, and O’Reilly (2016), some school districts that have participated in a four-day week seldom went back to the original five-day traditional schedule. The four-day week has become part of the identity of school districts implementing this schedule, and as such, part of the culture within the school district (Tharp et al., 2016). Finch et al. (2018a) agreed and cited the need for further research on the topic to identify whether staff morale boosts extended past the first year of implementation of the four-day school week. One western state one school district

showed a decline in test scores after the first year of implementation of the four-day week (Tharp et al., 2016). These conflicting results showed the need for further research in the area to better understand the impact a structural change had on school districts that moved to the four-day school week, as there has not been a conclusive study to learn the impact on student achievement over a long period of time (Tharp et al., 2016).

The theoretical framework of organizational structure described by Bolman and Deal (2013), guided this research study by detailing the reasoning behind restructuring. This framework combined with the relationship shown between effective teaching and teacher happiness described by Hattie (2003) outlined the need to compare the four-day school week calendar with the five-day school week calendar. The researcher sought to find a difference between students' achievement levels, attendance rates, school climate, and the specific school calendar being used.

Variables which Impact Student Achievement

In Missouri, school district leaders have been charged with creating an effective environment in their districts in areas of student achievement in order to meet criteria set by the state (MoDESE, 2018a). The MoDESE MSIP Handbook outlined goals based on student achievement, which were used to measure Missouri schools each year (MoDESE, 2018a). MoDESE (2018a) also applied a score to each district based on certain student achievement outcomes which allowed the state and school districts to compare achievement rates. The student achievement outcomes used by the Department Elementary and Secondary Education included (a) academic achievement, (b) subgroup achievement, (c) college and career readiness, (d) high school readiness, (e) attendance, and (f) graduation rates (MoDESE, 2018b). However, according to Hattie (2003), there

were a number of different factors that could affect student achievement. Those subsequent factors will be discussed here as well as how they may be affected by the four-day school week.

Attendance. In many school districts where the four-day school week has been implemented, attendance rates have consistently improved since implementation first took place (Weldon, 2008). While many school district administrators made the financial argument for moving to the four-day week, improved attendance was actually one of the reasons many school districts made the switch (Finch & Turner, 2018). In the MSIP Handbook, (MoDESE, 2018a) attendance is listed as one of the factors of student achievement measured by the state. Gershenson (2016) made the connection between students' achievement and students' absences noting students who were in school more often tended to perform better on academic tasks than students who were absent more often. Aucejo and Romano (2016) wrote of evidence from a study that positively associated regular attendance at school with higher student achievement. The authors utilized data from school district administration records in North Carolina to determine academic achievement outcomes based on students' attendance (Aucejo & Romano, 2016). According to Gershenson, Jacknowitz, and Brannegan (2015), excessive student absences were potentially harmful to student achievement. The authors discovered within three different demographics of students, separated by rural, urban, and suburban areas in North Carolina that student achievement was negatively affected by student absenteeism (Gershenson et al., 2015). Also, Gershenson et al. (2015) reported a statistically significant drop in reading scores as well as in math in North Carolina school districts. Tully (2017) found student absenteeism proved to be a strong predictor of

student achievement on the New Jersey standardized test for language arts and mathematics. While Goodman (2014) also noted school districts in Massachusetts found student achievement in math showed a significant drop when students were absent from school.

The evidence discovered in this literature pointed to a relationship between student achievement and student attendance (Van Eck, Johnson, Bettencourt, & Johnson, 2017). Van Eck et al. (2017) noted there were potentially harmful resulting factors experienced by students who were chronically absent. These included violent tendencies, delinquent behavior, and risky sexual behavior, along with other serious academic issues. (Van Eck et al., 2017). A study of youth crime conducted in Colorado noted when school was in session youth crime dropped 14% (Fischer & Argyle, 2016, p. 4). This 2016 study outlined the of student attendance in reducing risky behaviors (Fischer & Argyle, 2016). However, Cooper (2016) pointed out nine out of 10 schools in the United States who have dealt with some sort of chronic absenteeism from students.

According to Hattie (2003), the students themselves were responsible for their own academic success; more so than any other variable. Part of the reason the variable was so impactful in this case was the high correlation that existed between students' ability and their achievement (Hattie, 2003). However, in order for students to be successful in academics, they needed to be in attendance at school where they could learn in person (Gershenson, 2016). Van Eck et al. (2017) described students who were chronically absent were at a very high risk of dropping out of school, which has made attendance a crucial aspect of academic achievement.

Many school districts that have moved to non-traditional school calendars, such as the four-day school week have done so in part to improve student attendance (Weldon, 2008). Long (2016) cited a school district in Arizona, which reported after the implementation of the four-day week, students' absences declined. Some school districts have also reported parents were able to make necessary appointments when school was not in session, giving rise to an improved attendance rate (Denny & Hewitt, 2011). However, non-traditional school calendars, such as block scheduling, resulted in lengthening classes during the day by a significant amount of time (Kaya & Aksu, 2016). According to Finch and Turner (2018), the four-day school week, which added time to the day, could also pose problems for parents and students. Kaya and Aksu (2016) found some students and parents reported students were tired and burned out after attending the longer classes.

Length of the school day. Kaya and Aksu (2016) found block scheduling added longer periods of time called blocks to class periods allowing for fewer classes to be offered in a day. The lengthening of classes required some of the students' classes to be held on different days (Kaya & Aksu, 2016). The structure of classes for the four-day week typically involved one of the week days being dropped with additional time added to the remaining days (Cummings, 2015). Bolman and Deal (2013) described a structural balance, which needed to occur in an organization in order for it to be productive. The structure balance in the case of these organizations was overload which could lead to withdrawal (Bolman & Deal, 2013). Kaya and Aksu, (2016) found some students became withdrawn during the lengthened classes. An example of this was given by Bolman and Deal (2013) who described members of an organization who had too much

or too little to focus on would lack in production. The four-day week offered administrators a way to break this cycle by creating a school environment where students and teachers felt refreshed and ready to go at school (Weldon, 2008).

Hattie (2003) described schools, which included the building in which students attended, the class sizes, and the finances as accounting for 10% of what effected learning. Another researcher, DeAngelis (2016) agreed with these findings citing, the length of school day was a statistically significant predictor of student performance, but a weak one. According to Tully (2017), there was no statistically significant evidence which pointed to length of school day as a predictor of student achievement in language arts or mathematics. In another study which included one school district, Kaya and Asku, (2016) found mixed results when attempting to determine whether block scheduling had a perceived influence on student achievement at a middle school. In this study, the authors considered student perceptions in order to determine the advantages and disadvantages of block-scheduling on students' achievement (Kaya & Aksu, 2016). The results of the study found some students to be in favor of longer classes, citing more learning was taking place (Kaya & Aksu, 2016). However, according to Kaya and Aksu (2016) there were problems noted by some students as well. Students reported disengagement towards the end of the period; some students also had difficulty remaining on task for the duration of the period (Kaya & Asku, 2016). Hattie, (2003) pointed out that teachers and their relationships with students had a much more viable impact on student achievement than schools' structures. Positive student-teacher relationships were more likely to form when students were in attendance at school (Van Eck et al., 2017). O'Brennen, Pas and Bradshaw (2017) noted schools to be an educational environment that promoted positive

interactions and caring relationships. Van Eck et al. (2017) found a relationship existed between students' attendance and student-teacher relationships, which was included as a part of the school climate as a whole. Gruenert and Whitaker (2015) described school climate, which was affected by morale, as a very important part of teacher success and student success.

Teachers. As Hattie (2003) previously wrote, students could have the single greatest impact on their own learning and achievement. A second significant factor impacting student achievement were effective teachers who spent time in class with the students; this factor accounted for 30% of a student's learning (Hattie, 2003). According to Hattie (2014), this was attributed to the fact effective classroom teachers provided effective feedback as well as monitored learning and challenged students. Whitaker (2013) added, students who scored consistently higher on test scores could attribute this growth to their classroom experiences with their teachers. These teachers who were identified as being more effective did not solely base all of the students' success on standardized test scores and performance outcomes (Hattie, 2003). These teachers also helped students to invest in their own learning according to Hattie (2003), and guided students to engage in concepts taught and mastery of the subject matter. Effective teachers were found to put students first and had high expectations for students' academic achievement as well as behavior (Whitaker, 2013). Teacher effectiveness and impact varied, according to Hattie (2014), based on whether the teacher was inspired and passionate compared to those who were not, as well as the teachers' respective levels of experience. Hattie (2012) described inspired, passionate teachers as those who placed high value on developing positive effects for all students and worked to build expertise to

create positive effects for all students. Whitaker (2013) found, students' success could in some cases be attributed to, teacher experience and subject expertise as well.

According to Gershenson (2016) teachers' impact on non-cognitive behavior also varied. Gershenson, (2016) cited the following three reasons why teachers varied in regard to the influence they had on non-cognitive behaviors such as attendance. 1.) Some teachers were better at influencing students in regard to their character skills. 2.) Some teachers' attitudes toward teaching character skills in relation to academic skills varied. 3.) Some teachers showed variance in their perceived ability to influence character skills. Furthermore, Gershenson (2016) noted teachers' ability to help impact students' achievement varied at different levels when helping students with non-cognitive achievement; however, they still could have had an impact on students positive or negative.

Riley (2017) described keeping open teacher/student communications and developing positive relationships as a potential best practice contributing to increased attendance in high schools. In a study completed by Ladd and Sorenson (2015) in North Carolina, researchers found a relationship existed between teachers' experience and students' attendance rates as well as the amount of time students spent on school related work, such as, reading for pleasure. The researchers also found a relationship existed between teachers' experience and the degrees of incidents of disruptive behavior of students in the classroom (Ladd & Sorenson, 2015). As described by Hattie (2012), teacher impact could differ dependent upon variables specific to the individual teacher. This finding was echoed by Gershenson (2016) as he described the variances, such as experience levels and effectiveness in teachers who taught character skills to students.

Hattie (2012) discussed closing the gap of variance in teachers by incorporating structured and impactful professional development for staff, which was aligned to teacher effectiveness. Weldon (2008) cited, time during the school and days available for collaboration meetings as a possible road block for productive and effective staff development. The four-day school week was one possible solution to the problem many schools have had with finding time for meaningful and effective professional development (Finch & Turner, 2018). Some school districts utilized the day off during the week once or twice a month to bring teachers together, without students, to collaborate with other professionals (Weldon, 2008). The importance of teacher engagement and connectedness with their school, which was improved with professional development, was important in order to prevent teacher burnout and ultimately teacher turnover (O'Brennan et al., 2017). Teachers' perceptions of the built-in day for professional development was favorable according to Finch et al. (2018a). Teachers in the western United States also had positive perceptions of using an off day during the month to hold professional development meetings (Weldon, 2008). Additional research of teachers' perceptions of the four-day week and its effect on staff improvement and school climate was needed to determine whether students' academic achievement was negatively or positively impacted over time relative to the four-day week (Tharp et al., 2016).

School climate. School climate was described as being complex and as being influenced by many different factors (Marshall, 2004). Some of those noted by Marshall (2004) included academic performance, quality interactions between adults and students, perceptions of school environment, perceptions of safety and perceptions of trust and

respect. While there were many influences that could affect school climate, Hattie (2003) argued that school climate was a very important factor in teacher effectiveness within the classroom. Marshall (2004) made the case for the importance of a healthy school climate by discussing the positive effects a positive school climate can have on behavior and emotional health of students. Positive school climate was also associated with increased social relationships for students (Marshall, 2004).

School climate was also important for satisfaction in the work place (Taylor & Tashakkori, 1995). It was discovered to be a predictor for job satisfaction in schools for teachers as well as administrators (Taylor & Tashakkori, 1995). According to Cummings (2015), the four-day school week could have an impact on how teachers view school climate. School climate has also been associated with having an impact on teacher retention and teacher recruitment (Finch & Turner, 2018). All of these variables have had some influence on student achievement and the ultimate success of school districts (Gruenert & Whitaker, 2015). School climate and school culture should not be confused with one another; however, both have a significant bearing on a school district as well as its staff and students (Whitaker & Gruenert, 2015). According to Greunert (2008), school climate is impacted by feelings, collective mood, and morale of the group; while culture is impacted by the collective setting of expectations that became unwritten rules to which members of the district conformed in order to remain in the group.

As described by Gruenert and Whitaker (2015), climate could change day to day as it was influenced by morale and mood; whereas culture took longer to be affected, because culture dictated the personality of a school district. According to Van Eck et al. (2017), school climate includes school connectedness, student-teacher relationships, and

teachers' willingness to encourage students, which has been shown to have an impact on student achievement. Gruenert (2008) found culture was shaped over time through school climate. Climate and culture were deemed important because due to the impact on student achievement and the manner in which teachers interacted with students in the classroom (Gruenert & Whitaker, 2015).

The importance of a positive school climate on student success was described by Warner and Heindel (2017). The authors noted as whole school climate rose, staff morale came rose and discipline issues declined (Warner & Heindel, 2017). The close relationship between school climate and student achievement gave reason for an instrument to be developed in order to measure school climate (Hoy et al., 2002). Measuring school climate through student surveys to understand its effects on students within the school was one tactic described by Frieberg (1998). Hoy et al. (2002) developed a way to measure dimensions of school climate from the teachers' perspective.

The teachers' perspective was important due to the fact that teacher perception of school climate was one factor of teacher effectiveness according to Hattie (2003). There are several instruments which could be used to measure aspects of climate within an organization, such as the Organizational Climate Description Questionnaire (OCDQ), The Organizational Health Inventory (OHI), and the Organizational Climate Index (OCI) (Hoy et al., 2002). According to Hoy et al. (2002) the OCDQ was used to consider the openness of an organization by focusing on the relationships between the principal and teachers, and relationships among the teachers, as a means to measure climate. The OHI was utilized to consider aspects of climate which measured the relationship between the school and the students (Hoy et al., 2002).

The OCDQ was developed for elementary schools, middle schools, and high schools (Hoy et al., 2002). It contained the subsets of directive principal behavior, restrictive principal behavior, collegial teacher behavior, committed teacher behavior, and disengaged teacher behavior (Hoy et al., 2002). The descriptive principal behavior subsets, according to Hoy et al. (2002) consisted of teachers' perceptions that the principal was diligent in observing behavior in all facets of the schools. Marshall (2004) described the perception of safety and environment as an important facet of school climate. Supportive principal behavior was described as the manner which teachers perceived whether the principal led by example and attempted to motivate by use of positive reinforcement (Hoy et al., 2002). Collegial teacher behavior and committed teacher behavior were both described as containing positive interactions with students and staff, and helping one another by treating each other well professionally and personally (Hoy et al., 2002). Disengaged teacher behavior was associated with teachers showing up to work and not being involved in the development of students, as well as being demeaning and unwilling to accept fellow staff members (Hoy et al., 2002).

The OHI was a survey instrument developed by Hoy et al., (2002) which was used to measure the school climate subsets of institutional integrity, collegial leadership, resource influence, teacher affiliation, and academic emphasis. The OHI was developed for use in all school settings, which included elementary, middle, and secondary schools (Hoy et al., 2002). The Institutional Integrity dimension of school climate was described as a school's ability to protect teachers from perverse demands from groups of parents who aimed to be destructive to the school (Hoy et al., 2002). Collegial leadership was described by Hoy et al. (2002) as a school leader's ability to be supportive, friendly, and

to treat staff equally as well as hold high standards for performance in the school. The resource influence aspect of school climate involved a principal's capacity to influence superiors to help benefit staff, as well as providing staff with easy access to materials and supplies for instruction (Hoy et al., 2002). The dimension of Teacher Affiliation was related to how teachers felt toward the school, and whether they felt good about the other staff at the school (Hoy et al., 2002). It also included whether or not teachers were dedicated to their fellow teachers as well as the students who attended the school, according to Hoy et al. (2002). Finally, Academic Emphasis was described by Hoy et al. (2002) as a school's dedication for high achievement for all students and whether the school set the standard for high expectations (Hoy et al., 2002). According to Hoy et al. (2002) this standard was also measured by whether students in the school respected other students who were high achievers. Marshall (2004) echoed, students who had respect for fellow students was an indicator of a positive school climate.

The OCI was used to measure climate while researchers specifically considered the categories of institutional vulnerability, the collegial leadership, the professional teacher behavior, and achievement press (Hoy et al., 2002). According to Hoy et al. (2002) institutional vulnerability referred to how susceptible the school was to criticism from parents or local organizations. If the school was highly vulnerable, teachers and administrators could be negatively affected (Hoy et al., 2002). Collegial leadership was determined by how the principal treated and interacted with the staff, while also looking at whether or not there were clear expectations for standards of performance in place (Hoy et al., 2002). Professional teacher behavior consisted of how teachers viewed their co-workers capabilities, responsibilities toward students, and their ability to work

together with colleagues, as well as back those colleagues (Hoy et al., 2002). Finally, according to Hoy et al. (2002) achievement press was used to describe a school where high achievement was the expectation and students were respected by other students as well as teachers for success in reaching those expectations. Student guardians as well as school staff contribute to the creation of an environment for high achievement and school improvement (Hoy et al., 2002). This was important because as noted by Gruenert (2008), teachers who were happier performed better. This was echoed by Hattie (2012), who described teachers who were motivated were being more effective for their students.

While teachers were found to be more effective in the classroom when they had a better perception of school climate, it was also noted students reported higher grade point averages when they had a positive impression of school climate (O'Malley, Voight, Renshaw, & Eckland, 2015). Van Eck et al. (2017) found a relationship between how teachers and students interacted and student attendance rates. This was demonstrated by showing lower school climate measures meant there were more chronic absences among students through a multi-level latent profile analysis (Van Eck et al., 2107). Schools where students identified a perception of positive school climate among teachers were less likely to show higher rates of chronic absences (Van Eck et al., 2017). In schools with a healthy school climate, the relationships between students, teachers, and administrators were more positive (Hoy et al., 2002). Generally, schools who had a negative climate had much higher instances of chronic absences among students, whereas schools with marginal to positive school climate showed a lower rate of students who fell into the chronically absent category (Van Eck et al., 2017). These findings were echoed by Maxwell et al. (2017) who found student achievement to be closely linked to school

climate. Maxwell et al. (2017) used multilevel modeling which included student record data and staff reports to make a connection between student achievement and school climate. According to Maxwell et al. (2017), some students have shown the ability to break through socioeconomic statuses and cultural background to affect their student performance; in some cases which came to be known as the climate-achievement relationship. Students showed high achievement in schools with positive school climates, regardless of socioeconomic standing or cultural background (Maxwell et al., 2017).

Not all research showed a close relationship between school climate and student achievement. Allen, Grigsby, and Peters (2015) completed a quantitative analysis comparing student achievement outcomes in math and reading that revealed there was no relationship between teachers' perceptions of school climate and student achievement. Allen et al. (2015) pointed to other research which showed the opposite of their findings, citing differences in methodology as a possible reason for the discrepancies. However, Allen et al. (2015) suggested a relationship did exist between teachers' positive perception of school leaders and feeling more positive about their school. Apparently, teachers who identified school leaders as having a high level of idealized attributes felt more positive about their school; this contributed to an increased climate of the schools (Allen et al., 2015). Tharp et al. (2016) noted the importance of future research to determine if climate and student achievement continued to improve over time.

Gruenert and Whitaker (2015) found leadership tended to drive school climate and culture. While school culture and climate will exist on their own without a strong leader in the principal or administrative position, strong leadership could drive a more positive school culture and climate (Gruenert & Whitaker, 2015). Allen et al. (2015)

suggested a significant relationship existed between a positive school climate and a transformational leader within the district. Transformational leadership was described by Allen et al. (2015) as, “A leader’s ability to recognize the potential skills of an employee and engage the complete person and not just particular traits” (p. 3). The authors found a positive relationship existed between positive school culture and the five factors of leadership (Allen et al., 2015). The five factors of transformational leadership include: idealized attributes, idealized behaviors, inspirational motivation, intellectual stimulation, and individualized consideration (Allen et al., 2015). The authors found a significant positive relationship with school culture in all five areas, which showed the importance of leadership when related to school climate and overall culture (Allen et al., 2015). While leadership was shown to drive school culture (Whitaker & Gruenert, 2015), another variable that has an impact is teacher turnover.

Hattie (2012) identified teacher experience as a major factor in why teachers have a high impact on student achievement. Van Eck et al. (2017) showed student achievement has been linked to school culture and climate. Dahlkamp, Peters, and Schumacher (2017) discussed teacher retention as one of the most inherent challenges facing educators. Adnot, Dee, Katz, and Wyckoff (2016) added in many cases teacher turnover had a negative impact on student achievement. Dahlkamp et al. (2017) cited teacher turnover as being negatively associated with school culture; through a multi-level analysis, the authors found a relationship existed between school climate and teacher retention. Viewed through the institutional vulnerability lens of school climate, which focused on the relationship between schools and communities’ vocal parent and citizen groups, there was a statistically significant relationship between school climate and

teachers deciding to stay with a district or to leave a district (Dahlkamp et al., 2017).

Adnot et al. (2016) found low teacher retention, while widely accepted to negatively impact student achievement, sometimes positively impacted student achievement. This seemed to be true in special cases where teachers who were non-effective or of low effectiveness were replaced with more effective teachers causing teacher retention rates to be low while positively impacting students' achievement (Adnot et al., 2016).

However, Dahlkamp et al. (2017) pointed out, low teacher retention has been found to have negative impacts not only on student achievement but on school districts as a whole. As Freiburg (1998) offered, a positive school climate could result in positive outcomes for students as well as teachers within a school. Another find of this study was a negative school climate could have negative impact on results and growth of students (Freiburg, 1998). School district leaders and administrators have been searching for ways to combat areas of low teacher retention, negative school climate, low morale, and negative school culture (Finch & Turner, 2018).

The four-day school week has been coming to the forefront as one potential option administrators and district leaders could use to battle the many problems that have faced school districts (Finch & Turner, 2018). In western states, Cummings (2015) has noted teacher morale and school climate have increased as teachers are able to find a more specific way to get more academic activities during the day. Students have also favored the four-day week as it increased their perception of a positive school climate (Weldon, 2008). Finch et al. (2018a) discussed teacher perception of the four-day week as being very positive and positively impacting school climate. School district leaders in western states, where the four-day week is more prevalent, also noted the reduction in

staff turnover and how the school calendar has been a recruiting tool. Finch and Turner (2018) discussed a school in Missouri that attributed the four-day week as one of the main factors for retaining experienced teachers in the district. Another district described having low teacher turnover despite being one of the lowest paying in the area (Finch & Turner, 2018). Researchers, however, needed to determine whether this was a phenomenon that could continue over time to determine whether teachers would continue with the same enthusiasm as they did when the change began, as well as whether the four-day week would continue to impact student achievement (Tharp et al., 2016).

School Calendars

DeNisco (2015) cited modern school calendars were based on the agrarian calendar, meaning school calendars were built around agriculture so students would be available to help with the harvest. The agrarian calendar has become outdated and other school calendars have emerged in recent history (DeNisco, 2015). The first calendar to come to the forefront was the year-round school calendar (Wallace & Potts, 2015). The year-round school calendar was utilized by schools across the United States in order to increase performance and decrease learning loss due to extended breaks from school (Ryan, 2016). According to DeNisco (2015) the year round-school calendar also made it possible for districts to render aid to at risk students in a way they would not otherwise be able to; this contributed to the popularity of the year-round school calendar among teachers and staff (Ryan, 2016).

The year-round school calendar has been implemented in many school districts to combat summer slide which was steps backward in learning that took place over the summer break (Wallace & Potts, 2015). Dills, Hernandez-Julian, and Rotthoff (2016)

described knowledge decay as taking place when students returned to school from a break. Students were expected to retain knowledge from one semester return the next semester with the belief they would be able to apply previously learned material to a new area of study; however, this did not happen with great success (Dills et al., 2016). According to Dills et al. (2016) elementary and secondary students forgot academic material while they were home during the summer without some kind of school provided enrichment. A study in Virginia was utilized to determine if the year-round school calendar could be effective in combating summer learning loss of secondary students (Morin, 2017). The study did not reflect a significant impact on achievement between a traditional calendar and a year-round calendar (Morin, 2017). According to McEachin and Atteberry (2017), the way many states set up their testing windows in the spring, put students at a disadvantage by placing much of the learning that needed to take place at the end of the school year, closer to the test. To combat this trend the authors suggested adding a fall test in order gain a baseline of student knowledge for the year and have it compared with the spring to better hold teachers and administrators accountable for student learning (McEachin & Atteberry, 2017). McEachin and Atteberry (2017) discussed providing additional testing in the fall would have been an expensive endeavor. However, as noted by Weldon (2008), schools have faced a budget crisis where extra spending has not been an option for many districts. Kelsey (2016) noted, however, student achievement rose in districts where the year-round school calendar was implemented, which resulted in less summer learning loss.

School districts have also found by implementing a balanced calendar that attendance among students and teachers was higher, and there were also more

opportunities for remediation of students (DeNisco, 2015). The year-round calendar seemed to be a very popular option for many schools and appeared to become a mainstream idea with over 3,700 schools nationwide adopting it, as of 2011 (Ryan, 2016). However, in the Midwest and many western states the four-day week has become increasingly popular when non-traditional school calendars became a topic of conversation (Finch & Turner, 2018).

In Missouri, the number of schools that moved to a four-day school week as of 2018 was 25, and this number has increased every year since 2011 (MoDESE, 2018a). This growth was not unique to Missouri, the Idaho State Department of Education has shown the number of schools has increased for the last 10 years as well (ISDE, 2018). Ryan (2016) found in 2009 more than 120 districts nationwide were implementing a four-day school week, with hundreds more considering the move in the near future. The four-day school calendar was not a new phenomenon to impact the public-school community; it has been employed many times in the past as a way for schools to sustain themselves during budget shortfalls, including the state of Hawaii as recently as 2009 (Finch et al., 2018a).

As the four-day school week became more popular and more districts were interested in implementing the calendar, guidelines from the state were needed to give school districts a plan of how to implement the four-day school week (Finch et al., 2018a). In Idaho, school districts must adopt a school calendar which allowed the schools to reach 990 hours present for high school students, 900 hours for fourth grade through eighth grade students, 810 hours for first through third grades, and 450 hours for kindergarteners (IDSE, 2018b). To do this, four-day school districts in Idaho adopted a

calendar where children attended school for seven hours a day and went to school 142 days of a year (IDSE, 2018). In Missouri, school districts were required to adopt a calendar that provided a minimum of 1,044 hours of instruction per school year (MoDESE, 2018c). The state of Missouri also set guidelines which only allowed for a minimum of four hours per day, and no more than eight hours in a school day for school districts participating in the four-day school week (MoDESE, 2018c).

Four-day week in a school setting. The most effective school calendar to use had been debated by school administrators for some time (Finch & Turner, 2018). School districts that faced budget shortages in different states and regions across the nation chose to shorten the school week in many cases in order to accommodate budget constraints (Finch & Turner, 2018). According to Richert (2015), the four-day school week has mostly impacted rural school districts and communities. Financial savings has been one of the major selling points for proponents of the four-day school week; however, the savings has not always added up to what school district leaders expected (Rosenberg, 2015). In Idaho, it was reported that financial savings were not substantial, and most of the cost savings occurred through the decrease of need in hourly, classified staff (ISDE, 2018b). It was also noted, savings in some cases was minimal, although there were other benefits of the four-day week besides the financial savings (Weldon, 2008).

Cummings (2015) discovered that many schools began to see the other benefits the four-day week was bringing to their staff and students outside of potential financial savings for the districts. Teachers reported improved morale and being less tired, even though days were technically longer and district leaders reported increased recruitment of

teachers (Cummings, 2015). With many benefits being identified by districts, there were also concerns about the four-day school week (Weldon, 2008). Finch et al. (2018b) found the impact on community economics was a concern for some. Although Fischer and Argyle (2016) noted a possible relationship between the four-day week and a rise in juvenile crime.

The implications of the four-day school week's potential impacts in communities where the four-day school week had been implemented had some school district community members concerned (Finch et al., 2018b). School districts within rural areas had a close connection with communities, as school districts in rural areas provided a number of jobs for the area (Finch et al., 2018b). According to Finch et al. (2018b), respondents who represented the economic area of the communities were evenly divided in their support for or against a four-day week. However, the results were significantly different for those respondents who were identified to have had children in the district, showing a more positive perception of the four-day school week (Finch et al., 2018b). In the case of juvenile crime rates rising, there was a slight increase in youth property crime that took place in communities where school districts had implemented the four-day school week; however, other crime rates were unaffected (Fischer & Argyle, 2016). Some school districts also were forced to deal with differing perceptions of the four-day school week and how it would affect their communities (Weldon, 2008). While the four-day week has proven to be growing in many areas with some facet of the community for it and others against it, it was not a new concept (Finch et al., 2018a). The reduced work week has not only been in practice in school settings, but private and government sectors have utilized the four-day week as well (Finch et al., 2018a). Schools like other

organizations, had their own practices and systems in which they operate that included parents, students, teachers and administrators, all of whom are affected by changes made by the organization (O'Brennan et al., 2017).

Four-day week in the workplace. Finch et al. (2018a) found through their research, the Governor of Utah issued mandatory four-day work weeks for state workers in order to cut costs and allow the state to better deal with rising costs of energy. Moreover, the move was not only used to deal with rising costs, the Utah Governor also used the four-day week to recruit and retain state employees (Finch et al., 2018a). A study from the University of Kentucky detailed the job satisfaction of workers who were moved from a five-day 40-hour work week to a four-day 40-hour work week (Ivancevich, 1974). The purpose of the study conducted by Ivancevich, (1974) was to determine if a shorter work week had an impact on the stress levels, attendance, job performance, and job satisfaction of workers. Satisfaction rates among workers in the four-day 40-hour work division indicated workers were much more satisfied with their jobs, and many workers were much more satisfied with their jobs, and many showed greater improvements (Ivancevich, 1974). Ivancevich (1974) also discovered employees did not show a significant increase in attendance. A more recent study reported when given the choice of the four or five-day work weeks, employees in the work force who chose four-day week were much more satisfied with their work schedules (Wadsworth & Facer, 2016). The purpose of this study was to determine the impact a shorter work week had on employees' work and family balance (Wadsworth & Facer, 2016). The authors determined participants who approved of the shorter work week also reported more positive attitudes toward their own job and family balance (Wadsworth & Facer, 2016).

As Finch and Turner (2018) discussed, the idea of the four-day week did not begin with schools. The four-day week has been used by other organizations for many years; recently however, there has been an increase in the number of districts implementing it (Finch & Turner, 2018).

Four-Day School Week Impact on Student Achievement

Like many companies and organizations in the past school districts started out trying to sustain themselves and utilized the four-day school week for its financial impact, but realized other benefits that came along with it (Finch and Turner, 2018). However, the impact of the four-day school week on school districts have not been completely clear, and there has been little peer reviewed research in the area of staff perception (Finch et al., 2018a). There has also been little done in the area of student achievement that has reached consensus (Gower, 2017). Some researchers found the advantages of the four-day week on student achievement, while other researchers discovered more disadvantages (Gower, 2017). Cummings (2015) noted the lack of quantitative proof indicating whether the four-day school week helped or hurt student achievement. Cummings (2015) described some school districts showed improvement in scores while other districts reported drops in scores or scores which remained unchanged. Tharp et al. (2016) noted some school districts that moved to the four-day school week have not returned to the traditional five-day week. Some of the reasons cited in the study conducted by Tharp et al. (2016) were the need for further research on the effects the calendar change had on student achievement as well as on staff perceptions. This information could present school districts with a broader view of the four-day week to make more informed decisions.

Nationally, there has been relatively little written on the topic of the four-day school week and its impact on student achievement (Hanson, 2017). Donis-Keller and Silvernail (2009) also cited the limited research available on the four-day week mainly due to the novelty of the plan and the short time it has been in use resulting in the lack of data on student achievement. However, the issue has been addressed by some researchers at different levels of the education system, such as Anderson and Walker (2015), who studied the impact of the four-day week on elementary students. A similar study was conducted by Tharp et al. (2016) which also focused on the effects of the four-day school week plan on elementary students. Maxey (2018) conducted research in Oklahoma which analyzed student achievement in four-day school districts at the secondary school level. While Denny and Hewitt (2011) took a broad look at districts as whole to determine impacts of school calendar change on student achievement. In Missouri, Gower (2017) analyzed data from school districts who had adopted the four-day week schedule to determine whether they were performing better before or after they made the switch to the four-day school week. Donis-Keller and Silvernail (2009) found Silvernail (2009) found the limited research conducted had mixed results, some school districts showed drops in student scores, while others showed improvement in student scores.

Student achievement at some elementary schools in Colorado were shown to have been impacted by the move to a four-day school week (Anderson & Walker, 2015). The authors used a methodology that included gathering standardized test scores from school districts in the state of Colorado and comparing the results between schools that participated in the four-day week and schools that did not (Anderson & Walker, 2015).

The authors found a positive relationship with student achievement in elementary schools and the four-day school week (Anderson & Walker, 2015). In contrast to this study, Donis-Keller and Silvernail (2009) also cited instances where a move to the four-day school week had no significant impact on student achievement. Contrary to those findings, Tharp et al. (2016) found elementary schools in Montana had significant drops in student test scores in school districts that participated in the four-day school week. In the study, Tharp et al. (2016) discovered initial increases in test score of students after the first year of implementation; however, on the second and third year of implementation test scores for students began to drop. These findings were echoed by Denny and Hewitt (2011), who wrote that average test scores for districts participating in the four-day school week were lower than school districts that participated in the traditional five-day school week in 11 out of 12 comparisons. In Missouri, nine school districts reported there was no change in dropout rates or ACT scores among secondary students who participated in the four-day school week (Gower, 2017). At the secondary level in Oklahoma, a negative relationship was found to exist between student achievement and the four-day school week (Maxey, 2018). These results in Oklahoma were attributed by some school leaders as the result of having longer school days (Hill, 2017). Maxey (2018), utilized public data, which graded each school district on achievement in order to determine students' success rates. Maxey (2018) noted initially school districts that began to implement the four-day school week saw increases in districts' test scores; however, for many of the districts the scores seemed to drop after the first year of the calendar change. Maxey (2018) found differences in socioeconomic statuses between the school districts that were implementing four-day school week schedules and the districts

that were implementing five-day school week schedules; many of the four-day schools were considered rural districts and of a lower socioeconomic status which may have contributed to this outcome.

In contrast to these findings, Donis-Keller and Silvernail (2009) cited school districts in New Mexico where student test scores improved to the point of surpassing state and national averages. According to Denny and Hewitt (2011), there was not substantial evidence to make a clear determination whether or not a four-day school week would predict positive or negative impacts on student achievement. The authors found districts considering implementation of the four-day school week should do so for reasons other than to improve student achievement (Denny & Hewitt, 2011). Anderson and Walker (2015) maintained there were many ways the four-day school week could impact student achievement, school climate, and teacher morale.

Gruenert and Whitaker (2015) described teacher morale as an important piece that helped direct overall school climate and school culture in most school districts. School districts using the four-day week in Colorado determined students were impacted by the teachers' positive morale (Donis-Keller & Silvernail, 2009). Students showed improved attendance rates and performed better in academic area (Donis-Keller & Silvernail, 2009). School climate and culture, according to Van Eck et al. (2017), played an important piece in student achievement and attendance improvement.

Another way students were impacted by the four-day week had to do with the effect this change had on the schedules of their teachers (Anderson & Walker, 2015). This was echoed by Cummings (2015), who described how teachers needed to adjust their teaching schedules in order to fit with the four-day school week. However, as

Cummings (2015) pointed out, this was not always viewed as negative by the teachers. According to Anderson and Walker (2015), teachers were able to adjust to the more flexible schedule which allowed them more time during class to thoroughly cover the content of lessons. Teachers were impacted by the four-day school week in other ways as well (Anderson & Walker, 2015).

Donis-Keller and Silvernail (2009) found teachers who were allowed more flexibility and time to concentrate on academics showed increased morale. Hattie (2003) detailed the relationship between teacher happiness and student achievement. Finch and Turner (2018) most found teachers in Missouri reported a positive perception of the four-day school week. Hanson (2017) reported teacher approval of the four-day school week in Colorado was in the upper 80 percent. Teachers in Minnesota who had participated in the four-day week also reported a favorable view of the schedule and would recommend it to other districts (Hanson, 2017). Based on the results of their study, Anderson and Walker (2015) found teacher turnover was not specifically proven to have been affected by the move to the four-day school week, however, teacher attendance increased in schools that moved to the four-day school week. This finding was repeated by Donis-Keller and Silvernail (2009) who found teachers in four-day school week districts were less likely to leave for another job. Teachers in rural Missouri schools were also reported to be staying in jobs for less pay, in order to keep the four-day school week as their schedule (Finch & Turner, 2018). Teacher attendance was also affected (Cummings, 2015). In Arizona, district leaders reported teachers' attendance rates rose with the implementation of the four-day school week (Weldon, 2008).

There was a lack of evidence to prove conclusively if there was a positive or negative effect on student achievement when test scores and district report cards were analyzed as a whole (Denny & Hewitt, 2011). Attendance was one of the criteria used by the state department of education to measure student achievement (MoDESE, 2018a). Many districts have shown increases in student attendance when they began to implement the four-day school week. School districts in western states have reported increased attendance since implementing the four-day school week (Weldon, 2008). School districts in Missouri have also reported significant jumps in student attendance (Finch & Turner, 2018). According to Gower (2017), who also studied Missouri school districts, improvements in attendance were some of the most notable differences in schools since moving from the traditional five-day school week to the four-day school week. The improvements in student attendance have been described as one of the most positive outcomes associated with the four-day school week (Donis-Keller & Silvernail, 2009).

Hattie (2003) found that attendance was one of the most important factors for a student's success. Van Eck et al. (2017) discovered there was a relationship that existed between students who had chronic absenteeism and potential harmful behavior from students. As Gershenson et al. (2015) pointed out, student attendance was a potential predictor of student achievement over time and could have an effect on student outcomes. There were different perceptions of why attendance improved in four-day school weeks (Gower, 2017). Also, according to Hanson (2017), students understood when they missed class time in a four-day school week calendar the amount of material covered that day would put them in serious jeopardy of falling behind in their studies and compromising their grades. In terms of attendance and staying in the classroom with the

teachers, students in four-day school districts also miss less class time due to discipline issues (Hanson, 2017). Parent perceptions of the four-day week were important as well (Finch et al., 2018a).

Hanson (2017), noted parents' perceptions of the four-day school week were favorable. For the most part, parents' perceptions of the four-day school week generally grew as the district had continued implementation over time (Hanson, 2017). This was echoed by Henton (2015) who described many school districts in Minnesota that reported high rates of satisfaction of the four-day school week in their communities. In Montana parents of students who participated in weekend activities were in favor of the four-day school week (Amys, 2016). According to Finch et al. (2018b), community support of the four-day week in Missouri was generally split. This was echoed by Hanson (2017), who described community support as being split between those who were involved in the school in some way and those who were not. Those community members who did not have a connection to the school were less supportive of the four-day school week than those who were connected (Hanson, 2017). According to Faurei (2015), parent surveys regarding the four-day school week in one Minnesota school district, were returned with a 95% approval rate.

Community perception, along with parent perception and student achievement, should all be considered by school district leaders when determining whether or not a school district should implement the four-day school week (Cummings, 2015). The research produced mixed results regarding an impact on student achievement (Denny & Hewitt, 2011). However, over time the literature related to student attendance has been consistent (Donis-Keller & Silvernail, 2009). (Finch et al., 2018a). Future research of the

four-day week and its impact on student achievement was needed due to inconsistencies found among the results of several studies (Cummings, 2015). More research was required due to the relatively new concept of the four-day school week (Finch et al., 2018a). This was reiterated by the results coming from Oklahoma secondary schools, showing student achievement was possibly suffering as a result of the four-day school week (Maxey, 2018). Tharp et al. (2016) also showed the need for further research on the four-day school week by showing a decline in elementary standardized test scores after two years of implementation.

Summary

The literature review provided an in-depth examination of the variables that can impact student achievement, as well as how those variables were connected and could affect one another over time. Van Eck et al. (2017) noted attendance as a possible predictor of achievement. While Gruenert and Whitaker (2015) suggested school climate, culture, and teacher morale were impactors of student achievement. Hattie (2012) touted teachers as having one of the greatest impacts on student achievement. Furthermore, Kaya and Asku (2016) described the relationship between length of school day and student engagement during the school day as having some impact on student achievement. Research on each of these variables indicated they were all significant and could possibly be affected by the four-day school week.

As described by Bolman and Deal (2013), any structural change could have an impact on employees and production. Finch et al. (2018a) described the four-day school week as having an impact in many of these areas. The potential savings of the four-day school week made it a popular choice for school districts; however, the long-term impact

on student achievement was unclear (Long, 2016). Tharp et al. (2016) noted the increase in test scores of four-day elementary schools at the beginning of implementation, were followed by a drop in test scores in subsequent years, attributing the drop to the structural change the district had made.

Research results have been both positive and negative in regard to the relationship between the four-day week and student achievement. Finch et al. (2018a) also described the need for further research to determine the impact the four-day school week would have on teacher perception of the schedule in their districts. Future research was needed to allow districts to determine if student achievement was affected positively or negatively over time (Tharp et al., 2016). Long (2016) noted school districts that were considering implementation of the four-day week should do so carefully, which emphasized the need for further research on the topic. In each case described in the literature review there was a need for future research on the topic to take place in order to further determine the impact the four-day school week will have on school districts.

Chapter Three describes the methods used in the study. It focuses on the problem and purpose of the study which address the research questions included in the study. The research design outlining the specific methodology used in the study will be explained. The population and sample are discussed, as well as the instrumentation used for data collection. A discussion of how the data was analyzed to answer the research questions are included in this chapter. Ethical considerations of the study are also discussed in Chapter Three in order ensure confidentiality of student information that was utilized for the study.

Chapter Three: Research Method and Design

The main objective of this study was to add to and build upon the growing body of research literature involving the four-day school week. Some school districts have been faced with a number of issues in the past several years including budget constraints, as well as lowering enrollments, and high teacher turnover (Donis & Silvernail, 2009). In some Missouri schools, participating in the four-day school week had become a popular trend (Finch et al., 2018a). According to Tharp et al. (2016), school district leaders need to consider many implications that go beyond the popularity of the four-day week and consider the academic impact of the calendar change.

In this chapter the purpose and overview of the study were outlined along with the design of the study, which included the guiding research questions. Population sample and instrumentation were discussed, as well as data collection and data analysis techniques. Ethical considerations of participants in the study were detailed, as well as a preview of Chapter Four.

Problem and Purpose Overview

Some school district leaders faced with budget shortfalls and dropping enrollment have been forced find ways to keep their school districts performing up to state expectations (Donis & Silvernail, 2009). The four-day school week has emerged as one of the primary ways school district leaders chose to combat issues like lowering enrollment and attendance in order to offset some of the cost associated with operating a school district (Finch et al., 2018a). School district leaders who considered implementation of the four-day school week had to consider the academic implications to their students. While Weldon (2008), discussed the positive impacts of the four-day

week, such as improved student and teacher attendance and an increase in teacher retention, Tharp et al. (2016), noted the inconclusive findings regarding how the four-day week affected student achievement over time. Tharp et al. (2016) concluded a need for further research on this topic.

This study was designed to provide a comparison of rural secondary schools that participated in the four-day school week and rural secondary schools that participated in the five-day school week. The purpose of the study was to determine whether or not a significant difference existed between rural four-day secondary schools and rural five-day secondary schools, when comparing academic achievement, student attendance, and school climate. Through this study, the aim was to determine the impact of the four-day school week on students' achievement and students' attendance, as well as any differences in overall school climate.

Research Questions and Hypothesis

The following research questions guided the study:

RQ1: Is there a significant difference in secondary schools' attendance scores on the APR between schools that participated in the four-day school week and the five-day school week?

H_{1a}: There is a significant difference in secondary schools' attendance scores on the APR between schools that participated in the four-day school week and the five-day school week.

H_{1o}: There is not a significant difference in secondary schools' attendance scores on the APR between schools that participated in the four-day school week and the five-day school week.

RQ2: Is there a significant difference in secondary schools' academic achievement level scores on the APR between schools that participated in the four-day school week and the five-day school week?

H2_a: There is a significant difference in secondary schools' academic achievement level scores on the APR between schools that participated in the four-day school week and the five-day school week.

H2₀: There is not a significant difference in secondary schools' academic achievement level scores on the APR between schools that participated in the four-day school week and the five-day school week.

RQ3: Is there a significant difference in organizational climate between schools that participated in the four-day and the five-day week?

H3_a: There is a significant difference in organizational climate between schools that participated in the four-day and five-day school week.

H3₀: There is not a significant difference in organizational climate between schools that participated in the four-day and five-day school week.

Research Design

Quantitative research was used to establish relationships that exist between variables (Fraenkel et al., 2015). This quantitative study was developed as a two-part design to address the research questions. The first portion of the study was designed to compare the secondary schools' attendance rates, while the second portion of the study was designed to compare the achievement levels between rural school districts that participated in the four-day school week and rural school districts that participated in the five-day school week. The final portion of the study was designed to compare

organizational climate between rural secondary schools that participated in the four-day school week and school districts that participated in the five-day school week.

The first portion of this study involved collecting archived secondary data from the MoDESE (2018a) for the school years 2015 and 2016. These data were one portion of the dependent variables for the study which addressed research questions one and two. The number of days a week a school was in session made up the independent variable portion of this study. The archival secondary data were used to compare rural secondary schools that participated in the four-day school week and rural secondary schools that participated in the five-day school week. This was accomplished by collecting data from each participating secondary school's 2015 and 2016 Annual Performance Report (APR).

The second portion of this study involved collecting survey data to determine teachers' perceptions of the organizational climate in their respective schools. This will address research question number three. The data were the second portion of the dependent variables for the study. The schools were separated into two separate categories. The first category was four-day week schools. The second category was five-day week schools. These data were collected through the Organizational Climate Index survey (OCI) (see Appendix A). Teachers from each of the participating schools were invited to participate in the OCI survey. The OCI is an instrument created for the use of school districts to measure organizational climate in their schools (Hoy et al., 2002). The OCI consisted of four dimensions of school climate which were collegial leadership, professional teacher behavior, achievement press, and institutional vulnerability (Hoy et al., 2002). Together these four dimensions made up the basis for the measure of school climate, which was used in the comparison.

The validity of a study represented the degree to which correct inferences can be made based on the results from the instrument being used (Fraenkel et al., 2015). In this study, validity allowed the researcher to have confidence in the results. Reliability referred to the consistency of the measures obtained from the instrument (Fraenkel et al., 2015). This consistency also allowed the researcher to have confidence in the results. The OCI had strong concept of school climate and was valid and reliable with a reliability measure of .94 for collegial principal behavior (CPB), .88 for professional teacher behavior (PTB), .92 for achievement press (AP), and .87 for institutional vulnerability (IV) (Hoy et al., 2002). The research design for this study helped answer the three research questions.

Population and Sample

The unit of analysis for this study was rural school districts in Missouri, which included 10 secondary schools. Of the secondary schools that were recruited to participate in the study, five participated in the four-day school week and five participated in the five-day school week. The secondary schools represented a convenience sample and were chosen from a list of Missouri school districts provided by the MoDESE database (MoDESE, 2018a). A convenience sample was described as a sample that was available for the study (Fraenkel et al., 2015). The convenience sample size of 10 secondary schools that participated in the study provided two years of data, which resulted in an effect size of 1.6 (Bruin, 2018). The effect size was determined using the data tool provided by Bruin (2018), which was important in determining statistical significance. An effect size was described as a guide used to specify the degree of an attained outcome (Fraenkel et al., 2015). For the purpose of this study, the

secondary schools remained anonymous. The first five schools chosen for the study were chosen based on the fact they were rural schools that participated in the five-day school week in Missouri. These five participating five-day secondary schools had an average free and reduced lunch rate of 48.54%. The second five school districts chosen for the study were chosen based on the fact that they were rural schools who participated in the four-day school week in Missouri. These secondary schools were also chosen based on the availability of two years of APR data while they participated in the four-day school week. The five participating four-day secondary schools had an average free and reduced lunch rate of 45.68% according to the MoDESE website (MoDESE, 2018a). The schools chosen for the study, were comparable in that they were in rural locations and had similar demographics.

Teachers were then invited to participate in the study, which created a self-selected sample of participants. A self-selected sample participant was someone who decided for him or herself to be a part of the study (Bluman, 2015). For the study to be valid and reliable, the data tool provided by Bruin (2018) specified the teacher sample portion of this study had to consist of a minimum of 70 participants. According to the data tool provided by Bruin (2018), the four-day week school sample needed to be at minimum 35 participants, while the five-day school week sample needed to consist of a minimum of 35 participants. This minimum number was required to achieve an effect size of .80 (Bruin, 2018). Data from the first 70 participants from the schools recruited were used in the study. An email letter of recruitment was sent to all superintendents of the school districts selected for this convenience sample inviting their secondary teachers to participate in the study (see Appendix B). After IRB approval was received and the

superintendents approved participation for their school districts, the researcher sent an email letter to district superintendents (see Appendix C) to be sent to all secondary teachers within their respective districts. In this letter, all potential participants were informed of the purpose of the study as well as a guarantee of anonymity and confidentiality in the survey. Participants provided their informed consent by participating in the survey (see Appendix C).

Instrumentation

This study consisted of two separate comparisons. The instruments were chosen based on the research questions. The researcher needed to choose instruments that would provide answers to the research questions. To address research question one and two, the first comparison involved students' attendance and achievement level data between school districts that participated in the four-day school week and school districts that participated in the five-day school week. In order to achieve the purpose of the study, the student attendance and achievement levels from each districts' Annual Progress Report (APR) from the Missouri Department of Secondary and Elementary Education were collected for the purpose of this comparison (MoDESE, 2018a).

To address research question three, the second comparison in the study involved assessing school climate data from rural secondary schools that participated in the four-day school week and rural secondary schools that participated in the five-day school week. To accomplish this purpose of the study, the researcher chose the Organizational Climate Index (OCI) (see Appendix A). The OCI was developed by Hoy et al. (2002) to provide schools an instrument to measure school climate. The OCI analyzed the climate

of schools using four separate dimensions, collegial leadership, professional teacher behavior, achievement press, and institutional vulnerability (Hoy et al., 2002).

The instrument was comprised of 30 questions, in which three were filler items and were not taken into consideration when scored (Hoy et al., 2002). Responses to the items on the instrument were gauged on a Likert-type scale from one to four, with one referring to rarely occurs, two referring to sometimes occurs, three referring to often occurs, and four referring to very frequently occurs (Hoy et al., 2002). This part of the instrument measuring collegial leadership was comprised of seven questions, the professional teacher behavior was comprised of seven questions, the achievement press was comprised of eight questions, and the institutional vulnerability was comprised of five questions (Hoy et al., 2002).

Each comparison that took place in the study was analyzed using a *t*-test. The researcher chose the independent *t*-test for the study due to the fact that this particular test was used to provide the best results when two separate means were compared (Bruin, 2018). The results of the individual *t*-test determined whether the null hypothesis was rejected for each research question. The researcher determined this by accounting for the critical value of each test. The critical value was stated by Bluman (2015) to be “the range of test values that indicates that there was a significant difference and that the null hypothesis should be rejected” (p. 412). The results of the *t*-Test in this study will address the research questions.

Data Collection

For the first part of the study, the researcher collected attendance data and achievement level data from the five rural school districts participating in the five-day

school week from the MoDESE database (2018a). The researcher then collected attendance data and achievement level data from five rural school districts participating in the four-day school week from the MoDESE database (MoDESE, 2018a). The data collected was from the school years of 2015 and 2016 school years. The data for student attendance and achievement levels from 2015 were then separated into two categories; secondary schools that participated in the four-day school week and secondary schools that participated in the five-day school week. This step was repeated for student attendance levels and achievement levels for 2016.

For the second part of the study, school district leaders were contacted by email letter (see Appendix B) informing them of the study, the purpose, the instrumentation that would be used. After receiving permission from the superintendents for their respective school district to participate, an informed consent letter was sent by the researcher via email (see Appendix C) to the pool of possible participants with a link to the survey attached (see Appendix C). The researcher created an on-line survey with the components of the Organizational Climate Index (OCI) using the Survey Monkey website (Survey Monkey, 2018). Fink (2012) noted the importance of the informed consent form because it provided the participants with the purpose, potential risks, and benefits to society, and guaranteed confidentiality. The survey window was open for three weeks.

Participants self-reported by completing the Organizational Climate Index (OCI) within the Survey Monkey website (Survey Monkey, 2018). The researcher sent a reminder email at the end of two weeks (see Appendix D), to allow participants an additional week to respond to the survey. Once the survey was closed, the researcher

collected data by using the online data tool provided by surveymonkey.com (Survey Monkey, 2018). Respondents' survey results were separated into two groups; participants who were employed at a school district who participated in the four-day school week and participants who were employed at a school district who participated in the five-day school week. The information provided by the respondents was kept secure by the researcher, as the information was protected by a secure username and password.

Data Analysis

According to Bluman, (2015) the collection, organization, analyzation, and summarization of data was completed to help draw conclusions from that data. The data were collected and analyzed in an attempt to draw conclusions from the information. Students' attendance and students' achievement level data from 2015 and 2016 from the Department of Elementary and Secondary Education (MoDESE, 2018a) were collected and analyzed. Data were also collected from teacher respondents from four-day secondary schools and five-day secondary schools. All the data were coded to protect the anonymity and confidentiality of all participants.

In the first part of the study, the data for attendance rates in the APR were taken from each school and separated into two categories; school districts that participated in the four-day school week and school districts that participated in the five-day school district. Once the data for attendance were separated, a mean was found for each category. The student achievement level data in the APR report were also separated into two categories, the school districts that participated in the four-day school week and the school districts that participated in the five-day school week. Once the data for student achievement level were separated, a mean was found for each category. Fraenkel et al.

(2015) described the mean as an average of scores within a distribution of data. Bluman (2015) noted that mean was one of the measures of central tendency. When attempting to compare two groups of data, comparing the means was one of a variety of techniques a researcher could use (Fraenkel et al., 2015). The means of the data in this study provided the researcher with an average to use for the comparison.

In this study, the samples were independent requiring an independent t -test be used to test the difference in the two means (Bruin, 2018). The mean from student achievement for secondary schools that participated in the four-day school week were then tested in a t -test along with the mean from secondary schools that participated in the five-day school week, in order to compare them. The mean for attendance levels were determined by the researcher for both the secondary schools that participated in the four-day school week and the five-day school week. The means were then compared in a t -test. The results of each t -test provided answers to the first two research questions.

In the second part of the study, teachers' results from the OCI were analyzed and separated into two categories. The first category consisted of teachers who were employed in a secondary school who participated in the four-day school week. The second category was teachers who were employed in a secondary school that participated in the five-day school week. The researcher analyzed the results of the OCI by following the scoring guide provided by Hoy et al. (2002).

The first step in analyzing the survey results consisted of applying a score of one, two, three, or four to each response in the survey based on whether the participants chose rarely occurs, sometimes occurs, often occurs, or always occurs. The researcher then determined the average for each item in both categories. Items numbered four, 14 and 30

were filler and were not scored. The researcher then calculated the four-day schools' score for each dimension by totaling the item averages from the first step and using the following formula provided by Hoy et al. (2002). According to Hoy et al. (2002), the researcher then added the responses to each question per dimension. The number of the survey items were included in the formula (Hoy et al., 2002). To complete the second step, the researcher then calculated the four-day schools' scores for each dimension by totaling the item averages from the first step and using the following formula: collegial leadership (CL) = 1+3+5+10+13+20+27, professional teacher behavior (PTB) = 8+18+21+23+25+28+29, achievement press (AP) = 7+11+15+16+17+19+22+24, and institutional vulnerability (IV) = 2+6+9+12+26. The researcher followed the third step by converting the scores for each dimension into a standardized score. To do this, the researcher followed the formula written by Hoy et al. (2002). For (CL), the researcher used the following formula: standard collegial leadership (SCL) = $100(\text{CL} - 2075) / 2.658 + 500$. For (PTB), the researcher used the formula: standard professional teacher behavior (SPBT) = $100(\text{PTB} - 21.280) / 1.520 + 500$. For (AP), the researcher followed the formula standard achievement press (SAP) = $100(\text{AP} - 20.80) / 2.352 + 500$. And finally, to determine the standard score for (IV), the researcher used the following formula: standard institutional vulnerability (SIV) = $100(\text{IV} - 12.417) / 1.687 + 500$. Once all of the dimensions were scored, a mean was determined from the participants in the four-day secondary school category and a mean was found from the five-day secondary school category and placed in a *t*-test to compare the means. The results of the *t*-test provided an answer to the third research question. Based on results of the OCI, the participants could locate where they ranked among other schools. According to Hoy et

al., (2002) scores of 200 or less, fell into the lower 99th percentile, while schools with a score of 300 fell into the lower 97th percentile and a score of 400, ranked in the lower 84th percentile. A score of 500 was considered average while a score of 600 was considered in the higher 84th percentile, and a score of 700 suggested the school was ranked in the higher 97th percentile; finally, a score of 800 indicated the school ranked in the higher 99th percentile (Hoy et al., 2002). In Chapter Four, the researcher reported the standard scores for the four-day secondary schools and the standard scores for the five-day secondary schools.

Ethical Considerations

When conducting a research study using a survey, the responsibility to ensure the privacy of all participants fell to the researcher (Fink, 2012). The researcher took the proper steps to maintain the anonymity of all participants in this study. Prior to the collection of data, this study was approved by the Lindenwood University Institutional Review Board (IRB). All data collected from school districts through the MoDESE (2018a) were coded to protect the identities of the school districts involved in the study. The four-day secondary schools were coded using the number 4D which indicated schools that were using the four-day school calendar. The Arabic number indicated which four-day school e.g., 4D 1, 4D 2, 4D 3, 4D 4, and 4D 5. The five-day secondary schools were coded using the number 5D which indicated schools that were using the five-day school calendar. The Arabic number indicated which five-day school e.g., 5D 1, 5D 2, 5D 3, 5D 4, and 5D 5. Schools' scores were stored in a password-protected computer.

Teacher participants were provided with an informed consent letter through email, which guaranteed their anonymity (see Appendix C). The informed consent letter also provided participants information regarding the purpose of the study. Participants agreed to the informed consent and participation in the study by completing the survey. Personal information about the participants was not needed nor collected as part of the survey. During the duration of the study, all materials were protected by secure username and password. Teacher responses to the OCI survey were stored in a password-protected file within Survey Monkey (Survey Monkey, 2018) and will be held for three years per Lindenwood University policy. All other collected data will be held in a locked cabinet for three years per Lindenwood University policy.

Summary

The methodology of this quantitative study was outlined in detail in Chapter Three. The chapter included the problem and purpose, which detail the research questions. There were three research questions which guided the researcher in the study. The research design outlined the dependent variables and independent variables used in the study. The population and sample explained the school districts and participants included in the study. This was followed by the instrumentation used in the study to gather data, which led to the collection of data and how data would be analyzed. Chapter Three was concluded with ethical considerations, in which the researcher discussed how the anonymity of the participants in the study was protected.

In Chapter Four, the researcher will provide the results of the study. The first portion of the study, in which attendance data and student achievement level data were collected, will be compared and presented. The second portion of the study, in which the

OCI was given to participants, will be compared and presented. The results are presented and described in an effort to answer the each of the research questions.

Chapter Four: Analysis of Data

The growing trend of some school districts in Missouri that have moved to the four-day school week from the traditional five-day school week has created a number of questions for those school district leaders (Finch et al., 2018a). Those questions became the basis for this research study. In previous chapters, the problem and rationale for this study, investigation of student achievement and school climate compared to various school calendars that have been used in Missouri, was explained. In the literature review in Chapter Two, variables that could affect student achievement were specifically explained. How the four-day school week has affected those variables in regard to the length of the school day, effects on attendance, and school climate were also described. Tharp et al. (2016) made the case for further research to determine the effects of the four-day school week on student achievement based on inconsistent findings in prior studies. After approval from the Lindenwood Institutional Review Board (IRB), the study was launched and data from the MoDESE website (MoDESE, 2018a) and the Organizational Climate Index (OCI) (see Appendix A) were collected (Hoy et al., 2002).

In this chapter, the results of the study to answer the three research questions, which guided the study, are reviewed. A detailed analysis of the data collected from the Annual Progress Report (APR) pulled from the MoDESE (2018a) website. The researcher also provided a comprehensive analysis of the OCI survey results (Hoy et al., 2002), which included scores for the four dimensions of school climate described by Hoy, as perceived by as perceived by teachers is included.

Overview of the Study

The purpose of the study was to determine whether a significant difference existed between the achievement levels and attendance rates of students, as well as teacher perceptions of school climate, between four-day week secondary schools and five-day week secondary schools. Attendance rates and school climate have been shown to have a tremendous impact on students' achievement levels (Hattie, 2003). According to Finch et al. (2018a), perception of the four-day school week has been positive in many school districts among parents of students as well as staff. Cummings (2015) noted an increase in teacher morale occurred among schools that participated in the four-day school week. Weldon (2008) also discussed the positive impacts the four-day school week had on student attendance rates. However, as Tharp et al. (2016) noted, the research to determine whether the four-day school week had a positive or negative impact on student achievement over time has been limited.

In order for the study to move forward the researcher requested and gained permission from the participating schools' superintendents through email letter. Following this initial contact and approval from the superintendents, the researcher sent an additional email correspondence to the superintendents which included an informed consent form and a link to the survey to be forwarded to their respective school staff. Respondents agreed to take part in the study by completing the OCI survey. A three-week window was allowed to collect survey responses. After two weeks passed, the researcher sent a reminder letter to the district superintendents of participating schools (see Appendix D). At the end of the third week, 70 respondents had taken part in the study. According to the data tool GPower 3.1 developed by Bruin (2018), for this

particular study, a total of 70 respondents created an effect size of 0.80 which added to the validity and reliability of the survey.

Population and Sample

The participating schools involved in the first layer of the study made up a convenience sample. Bluman (2015) described a convenience sample as, a sample that was easily accessible and available for a study. The convenience sample used for this study was not representative of all the teachers in the state of Missouri (Bluman, 2015). This sampling method was selected due to the fact that the four-day school week was a fairly new trend in the state of Missouri (Finch et al., 2018a). Therefore, the number of schools that fit the criteria for participation was limited. The majority of schools that participated in the four-school week at the time of the study were rural secondary schools. Of the 10 Missouri schools that participated in the study, all schools were rural. Thus, all participating schools were considered distant from an urban center (NCES, 2018). Each secondary school reported an approximate average free and reduced meal rate between 45% and 49% (MoDESE, 2018a).

The responses of the participants in this convenience sample addressed the first two research questions in the study. The individual participants involved in the second layer of the study represented a self-selected sample. A self-selected sample is a type of convenience sample in which the participants volunteered to participate in the study (Bluman, 2015). This type of sample could result in a sampling error, based on the fact that it was not a perfect representation of the population as a whole (Bluman, 2015). The teacher sample was made up of secondary school teachers who were employed at either a

four-day week school district or a five-day week school district. This self-selected sample addressed the third research question in the study.

Data Analysis

In order to determine if there was a significant difference between student achievement in the four-day school week calendar and student achievement in the five-day school week calendar, the Annual Progress Report (APR) data from the 2015 and 2016 school years of the 10 participating school districts were examined. For the purposes of determining student achievement levels, academic achievement level and attendance level scores from the APR were used. These two components made up the dependent variables of the study. The independent variables used in the study were the school calendars the participating schools chose to implement. Five of the schools participated in the four-day school week calendar and five of the schools participated in the five-day school week calendar. To compare the academic achievement level data, APR academic achievement level scores for the 2015 and 2016 school years of the participating four-day and five-day secondary schools were entered in Microsoft Excel and analyzed using a *t*-test. In order to compare the attendance data, APR attendance level scores for the 2015 and 2016 school years of the participating four-day secondary schools and five-day secondary schools were entered in Microsoft Excel and analyzed using a *t*-test. The outcomes of the *t*-tests were used to address the first two research questions.

The second layer of the investigation included teachers' perception of school climate. The aim was to learn how teacher perception of school climate differed between teachers who were in the four-day school week scenario from teachers who were

involved in the five-day school week scenario. Teachers' perceptions of school climate made up the third dependent variable of the study. The OCI was the survey instrument used to determine teachers' perceptions of school climate. The link to the OCI survey was distributed to teachers by the superintendents of the secondary schools which composed the sample of schools used in the first portion of the study.

To determine if a significant difference existed between the organizational climate of the four-day week secondary schools and the organizational climate of the five-day week secondary schools involved in the study, the OCI survey was launched. By utilizing the OCI survey, developed by Hoy et al. (2002), a quantitative value of teachers' perceptions of school climate was determined. The OCI survey consists of 30 questions. Twenty-seven questions made up the four dimensions of the survey, while three questions were filler (Hoy et al., 2002). The four dimensions of the OCI survey consist of collegial leadership (CL), professional teacher behavior (BPT), achievement press (AP), and institutional vulnerability (IV) (Hoy et al., 2002).

The responses to each question were ranked on a 4-point Likert-type scale ranging from one to four; with choice options including: (a) 1 = Rarely occurs, (b) 2 = Sometimes occurs, (c) 3 = Often occurs, and (d) 4 = Very frequently occurs (Hoy et al., 2002). The participants' responses were organized into two categories on the Survey Monkey website (Survey Monkey, 2018). The responses from teachers who were employed at a secondary school that participated in the four-day week were separated into the four dimensions recommended by Hoy et al. (2002) and the average for each answer was found. A value for each dimension of the OCI survey recommended by Hoy et al. (2002) was found. Next, the average score for each answer given by the participants from the

five-day secondary schools was found. Subsequently, the formula provided by Hoy et al. (2002) was used for each of the four dimensions of the OCI and a value was determined. The mean standard score for each dimension from the four-day school week responses and the five-day school week responses were analyzed using a *t*-test. The outcome of the *t*-test was used to address the third research question.

Research question number one. The information on the MoDESE (2018a) website regarding the APR attendance scores of the four-day week and five-day week secondary schools that participated in the study provided data to address Research Question Number One. The researcher categorized attendance rate data into two groups using Microsoft Excel. The first group consisted of the attendance data for the five four-day week secondary schools. The researcher recorded the APR scores given by MoDESE (2018a) for the 2015 and 2016 school years on Microsoft Excel and found the mean attendance rate scores for each school year in the four-day secondary schools (see Table 1).

Table 1

Four-Day Secondary Schools

APR Attendance Scores		
Secondary School	2015	2016
4D 1	10	6
4D 2	10	7.5
4D 3	9.5	7.5
4D 4	7.5	7.5
4D 5	7.5	7.5
Mean	8.9	7.2

Note. Data collected from the MoDESE website (MoDESE, 2018a).

The highest achievable point total a school could have scored in the attendance rate category was 10 points (MoDESE, 2018a). Two of the secondary schools were able

to achieve the prescribed goal of 10 points in 2015 and fell the following year. One secondary school fell short of attaining the maximum point total and fell by two points the following year. While two schools showed no change from one year to the next. Overall, the mean score for the secondary schools that represented the four-day school week calendar fell by 1.7 points from 2015 to 2016.

The second group of data consisted of the five-day secondary schools' attendance data. The APR scores used were from the 2015 and 2016 school years. The researcher recorded the APR scores from MoDESE (2018a) into Microsoft Excel and determined a mean for the five-day secondary schools' attendance rates (see Table 2).

Table 2

Five-Day Secondary Schools

APR Attendance Scores		
Secondary School	2015	2016
5D 1	10	10
5D 2	10	7.5
5D 3	9.5	10
5D 4	10	10
5D 5	10	10
Mean	9.9	9.5

Note. Data collected from the MoDESE website (MoDESE, 2018a).

Table 2 provided attendance rate scores and mean scores for the 2015 and 2016 APRs among the secondary schools that followed the five-day school week calendar. The highest achievable score possible for the attendance category was 10 points (MoDESE, 2018a). Out of the five secondary schools that represented the five-day school week calendar, four scored the maximum attainable points in the attendance category in 2015. Again in 2016, four of the five participating schools that represented the five-day school week calendar scored the maximum achievable number of points. One secondary school

increased 0.5 points from 2015 to 2016, while another school dropped from 10 points to 7.5 points during the same period of time. Overall, the mean score for APR attendance dropped 0.4 points from 2015 to 2016.

Both pools of participating secondary schools showed a drop in attendance APR scores from 2015 to 2016. However, the drop in the attendance APR mean score from the five secondary schools that represented the five-day school week calendar was less than the drop in attendance APR mean score for the five secondary schools which represented the four-day school week calendar. Overall, the decrease in mean score from the participating schools that represented the four-day school week calendar was 1.3 points greater than the drop from the schools that represented the five-day week calendar.

The greater decline in attendance APR scores from 2015 to 2016 of the four-day week schools compared to five-day week schools did not provide enough evidence to answer the first research question of the study. A statistical test was needed to ensure whether the difference in mean scores was enough to show a significant difference in attendance rates. The researcher chose to use a *t*-test to compare two independent means. To determine whether a significant difference existed in APR scores between four-day secondary schools and five-day secondary schools the researcher created a *t*-test using the means from the 2015 and 2016 school years' APR data from both pools of secondary schools. In order for there to be a significant difference in the APR attendance data between both pools of secondary schools, the *t* score had to achieve the critical value of Critical *t*. Critical *t* of the *t*-test was found using the GPower 3.1 online data tool (Bruin, 2018). If $t \geq \text{Critical } t$, the Null Hypotheses would have been rejected (Bruin, 2018). If t

< Critical t , the Null Hypotheses would not have been rejected (Bruin, 2018). The results of the t -test provided the answer to Research Question Number One (see Table 3).

Table 3

Four-Day and Five-Day Secondary Schools

2015-2016 APR Attendance Comparison

Four-Day Mean		Five Day Mean		t	Critical t
2015	2016	2015	2016		
8.9	7.2	9.9	9.5	.11	1.73

Note. Data collected from the MoDESE website (MoDESE, 2018).

Table 3 displays the mean APR attendance scores for both pools of secondary schools from the 2015 and 2016 school year. The researcher found Critical t to be 1.73, using the GPower 3.1 online data tool (Bruin, 2018). The results of the t -test were found to be 0.11.

Research question number two. The information on the MoDESE (2018a) website regarding the APR achievement level scores of the four-day and five-day secondary schools that participated in the study provided data to address Research Question Number Two. The researcher categorized student achievement level data into two groups using Microsoft Excel. The first group consisted of the five four-day week secondary schools' achievement level data. The data used was comprised of two school years of APR scores from MoDESE (2018a). The researcher recorded the scores on Microsoft Excel and found the mean achievement level scores of the four-day secondary schools for the 2015 and 2016 school years (see Table 4).

Table 4

Four-Day Secondary Schools

APR Achievement Scores		
Secondary School	2015	2016
4D 1	56	56
4D 2	45	50
4D 3	53	56
4D 4	49	47
4D 5	51	51
Mean	50.8	52

Note. Data collected from the MoDESE website (MoDESE, 2018).

Table 4 presented the achievement level scores and mean scores for the 2015 and 2016 APR among the secondary schools that followed the four-day school week calendar. The highest achievable score possible for the achievement category was 56 points for schools in Missouri (MoDESE, 2018a). Of the five schools that represented the four-day school week calendar, only one school attained the maximum score possible for achievement rate for both the 2015 and 2016 school years. Four of the five secondary schools improved their respective scores from 2015 to 2016, while only one secondary school’s score dropped. The two schools that improved from 2015 to 2016, improved by 5.0 points and 3.0 points. Overall, the mean score for the five schools representing the five-day school week calendar rose from 2015 to 2016 by 1.2 points.

The second group of data consisted of the five-day secondary schools’ achievement level data. The data were comprised of two school years of APR scores from MoDESE (2018a). The researcher recorded the APR scores from MoDESE (2018a) into Microsoft excel and determined a mean for the five-day secondary schools’ achievement level data (see Table 5).

Table 5

Five-Day Secondary Schools

APR Achievement Scores		
Secondary School	2015	2016
5D 1	49	55
5D 2	56	56
5D 3	52	54
5D 4	46	46
5D 5	52	52
Mean	51	52.6

Note. Data collected from the MoDESE website (MoDESE, 2018a).

Table 5 showed achievement level scores and mean scores for the 2015 and 2016 APR among the secondary schools that followed the five-day school week calendar. The highest achievable score possible for the achievement category was 56 points for schools in Missouri (MoDESE, 2018a). Of the five schools that represented the five-day school week calendar, one of the schools achieved the maximum amount of points possible for both years. None of sample schools’ APR scores declined from the 2015 to 2016 school years. Two of the sample schools’ scores improved from the 2015 to 2016 school years while three of the schools’ scores remained the same. One secondary school increased in their achievement level score by a total of six points and another school increased by two points. For all schools, the mean score for achievement level increased from 2015 to 2016 by 1.6 points.

The sample of secondary schools that represented the five-day school week had a higher mean in both 2015 and 2016 than the secondary schools that represented the four-day school week. Specifically, the researcher observed a difference between the two samples of secondary schools’ APR achievement level scores, with the sample of five-day secondary schools scoring slightly higher than the sample of four-day secondary

schools. However, in order for the researcher to address Research Question Number Two and compare data between the two groups, the researcher used a statistical test. The researcher again chose to use a *t*-test in order to compare the two independent means and determine whether a significant difference existed between the two sets of data. For the researcher to determine whether a significant difference existed in the APR achievement level data between both participating pools of secondary schools, the *t* score needed to meet or exceed the critical value of Critical *t*. Critical *t* of the *t*-test was determined using the GPower 3.1 online data tool (Bruin, 2018). Had $t \geq \text{Critical } t$, the Null Hypotheses would have been rejected (Bruin 2018). If $t < \text{Critical } t$ had been found, the Null Hypotheses would not have been rejected (Bruin, 2018). The results of the *t*-test provided the answer to Research Question Number Two (see Table 6).

Table 6

Four-Day and Five-Day Secondary Schools

15-16 APR Achievement Comparison

Four-Day Mean		Five-Day Mean		<i>t</i>	Critical <i>t</i>
2015	2016	2015	2016		
50.8	52	51	52.6	0.14	1.73

Note. Data collected from the MoDESE website (MoDESE, 2018a).

Table 6 depicted the APR achievement level mean scores for the secondary schools that represented the four-day school week calendar and the secondary schools that represented the five-day school week calendar. The researcher found Critical *t* to be 1.73 using the GPower 3.1 online data tool (Bruin, 2018). The *t*-test results indicated $t = 0.14$.

Research question number three. The results from the Organizational Climate Index (OCI) provided data to respond to Research Question Number Three. The OCI

was designed to provide school districts with a tool to measure organizational climate within their buildings (Hoy et al., 2002). The OCI was utilized by to gather teachers’ perceptions of school climate from teacher participants in the four-day school week scenario and the five-day school week scenario. The OCI survey results provided quantitative school climate data from both sample groups in the study.

The OCI was made up of 30 questions, 27 of which were scored. Teacher participants who worked in a school that participated in the four-day school week made up 35 of the responses used in the study. While teacher participants who worked in a school that participated in the five-day school week made up the remaining 35 responses used in the study. Together the teachers’ responses made up 70 total participants which added to the validity of the study because it allowed for an appropriate effect size based on Bruin’s (2018) data tool. Participants’ responses to the questions were separated by the school calendar used and, each dimension of the OCI was analyzed. The participants’ responded to the survey items using a 4-point Likert-type scale; the averaged responses to the (CL) portion of the OCI are shown below (see Table 7).

Table 7

Four-Day and Five-Day Secondary Schools’ Responses

Collegial Leadership		
Questions	4D	5D
1	3.8	3.08
3	3.69	3.31
5	3.74	3.78
10	3.66	3.53
13	3.54	3.22
20	3.29	2.86
27	3.49	3.03

Note. Data collected from the Organizational Climate Index Survey.

Table 7 showed the averaged responses from the four-day school week and five-day school week participants for each question connected with the (CL) dimension of the OCI. The collegial leadership dimension of the OCI was described by Hoy et al. (2002) as the teachers’ perception of how the principal treated staff in relation to professionalism, friendliness, and whether the leaders held high standards for performance. The four-day week respondents scored their building higher on average than the five-day week respondents on all but one of the questions. The (PTB) which was the next dimension of the OCI evaluated other aspects of school climate and will be discussed subsequently (see Table 8).

Table 8

Four-Day and Five-Day Secondary Schools’ Responses

Professional Teacher Behavior		
Questions	4D	5D
8	3.66	3.47
18	3.11	3.03
21	3.51	3.11
23	3.49	3.33
25	3.57	3.31
28	3.49	3.36
29	3.32	2.92

Note. Data collected from the Organizational Climate Index Survey.

The averaged responses to the (PTB) dimension of the OCI provided a detailed analysis of the participating teachers’ perceptions of respect and cooperation between colleagues. Table 8 illustrated the averaged responses from the four-day school week and five-day school week participants for each item linked to the (PBT) dimension of the OCI. In the responses, the teachers who represented the four-day school week sample scored consistently higher among these questions than the participants from the five-day

school week sample. The next dimension of the OCI used to measure school climate was the (AP).

The averaged responses from the sample of four-day and five-day school teachers regarding the (AP) dimension of the OCI, provided the researcher an in-depth analyzation of teachers' perceptions of their schools' respective level for high achievement among students and staff (see Table 9.)

Table 9

Four-Day and Five-Day Secondary Schools' Responses

Achievement Press		
Questions	4D	5D
7	3.59	3.42
11	3.26	2.81
15	1.97	1.94
16	2.14	2.03
17	2.29	2.28
19	3.37	3.36
22	2.23	1.81
24	3.46	3.17

Note. Data collected from the Organizational Climate Index Survey.

Table 9 depicted the averaged responses from the participants from both pools of secondary schools used in the study for each question associated with the (AP) dimension of the OCI. The teachers' perceptions of achievement press were consistently higher in the four-day school week sample than in the five-day school week sample. The greatest discrepancies in the scores for the (AP) items were in questions 11 and 22. The lowest discrepancies in the scores for (AP) items were in questions 15 and 17. The final dimension of the OCI to evaluate school climate was (IV).

The respondents’ survey results to the questions regarding the (IV) dimension of the OCI provided the researcher with a view of teachers’ perceptions of how they perceived their schools’ susceptibility to outside influence (see Table 10).

Table 10

Four-Day and Five-Day Secondary Schools’ Responses

Institutional Vulnerability		
Questions	4D	5D
2	2.03	1.86
6	2.47	2.22
9	1.89	2.19
12	1.83	1.94
26	2.00	1.83

Note. Data collected from the Organizational Climate Index Survey.

Table 10 displayed the averaged responses from the four-day school week and five-day school week participants for each survey item related to the (IV) dimension of the OCI. The teachers’ responses to the questions related to institutional vulnerability were varied between the four-day school week sample and the five-day school week sample. Teachers representing the four-day school week sample scored questions 9 and 12 lower than the five-day school week sample, while the five-day school week sample scored questions 2, 6, and 26 lower.

The responses from the sample of teachers from the four-day school week category and the five-day school week category provided teachers’ perceptions for each dimension of the OCI. However, in order to be properly compared, the teachers’ responses needed to be analyzed and turned into a standard score for each dimension. Using the formula provided by Hoy et al. (2002) the researcher was able to find a standard score for each dimension of the OCI. After the scores for each dimension were determined, the researcher found a mean score for all responses of the participants in the

four-day school week category and then the five-day school week category (see Table 11).

Table 11

Four-Day and Five-Day Secondary Schools OCI Comparison

Organizational Climate Index Standard Scores		
OCI Dimension	Four-Day	Five-Day
Collegial Leadership	651.99	577.50
Professional Teacher Behavior	688.81	582.23
Achievement Press	564.20	500.85
Institutional Vulnerability	369.76	359.09

Note Data collected from the Organizational Climate Index Survey.

Table 11 displayed the standard scores for the (CL), (PBT), (AP), and (IV) dimensions of the OCI for both the four-day and the five-day secondary schools. Based on the standard score received, Hoy et al. (2002) developed a ranking system to compare a school’s score to the national average for OCI standard scores. The four-day school participants’ responses ranked above the higher 84% of schools in teacher perception of (CL). The five-day school responses ranked between 50% and 84% of schools. The four-day school participants’ responses again ranked above the higher 84%of schools in (PBT). The five-day school responses ranked between 50% percent and 84% percent. The four-day school responses ranked just above 50%of schools in (AP). The five-day school responses ranked right at 50%of schools. Both the four-day school responses and the five-day school responses ranked lower than 84%of all schools in (IV).

Through the collection of responses and analysis, the researcher was able to determine that a difference existed between the two sets of teacher data. While there was a difference shown in the data, the researcher needed to complete a statistical test to determine the significance of the difference to address Research Question Number Three.

The researcher used a *t*-test to compare the mean of the teacher responses represented in the standard scores of each dimension of the OCI. For the results of the *t*-test to provide the researcher with evidence that a significant difference existed in the teachers’ perceptions of school climate between the four-day school week and the five-day school week, the *t* score had to be greater than or equal to the critical value of Critical *t*. The researcher determined Critical *t* of the *t*-test using the GPower 3.1 online data tool (Bruin, 2018). Had the researcher found $t \geq \text{Critical } t$, the Null Hypotheses would have been rejected (Bruin, 2018). If the researcher concluded $t < \text{Critical } t$, the Null Hypotheses would not have been rejected (Bruin, 2018). The results of the *t*-test provided the answer to Research Question Number Three (see Table 12).

Table 12

<i>Four-Day and Five-Day Secondary School OCI Comparison</i>				
	CL	PTB	AP	IV
Four-Day Schools	651.99	688.81	564.20	369.76
Five-Day Schools	577.50	582.23	500.85	359.09
<i>Mean Comparison</i>		<i>t</i>	<i>Critical t</i>	
Four-day and Five Day		.02	1.66	

Note Data collected from the Organizational Climate Index Survey.

Table 12 showed the mean standard scores for both the four-day and the five-day secondary school teachers’ responses. The teachers’ scores from the four-day schools were higher in every category of the OCI. Critical *t* was found to be 1.66 using the GPower 3.1 online date tool (Bruin, 2018). The researcher found the results of the *t*-test to be 0.02 resulting in not rejecting the Null Hypothesis for Research Question Three.

Summary

After collecting and analyzing the APR data from the MoDESE (2018a) website, as well as teachers' responses from the OCI, the researcher was able to find frequent differences in the data. The APR attendance and achievement level data collected from the secondary schools which implemented the five-day school week consistently scored higher on the APR than the secondary schools participating in the four-day school week. The researcher found a smaller difference between the APR achievement level data collected from the sample of secondary schools than on the APR attendance level data. However, the participating five-day schools were outscored in school climate by measure of the OCI standard scores. Through statistical analysis the researcher was able to determine while even though a difference in the two calendar groups existed, there was no statistically significant difference between the four-day school week and the five-day school week when comparing APR attendance rates, achievement level, and school climate.

In Chapter Five, the findings of this study will be discussed further. The researcher will discuss the conclusions of the study as well as implications for practice. Finally, the researcher will provide recommendations for future research on the topic and a final summary of this research study.

Chapter Five: Summary and Conclusion

The purpose of the study was to investigate how secondary schools that used the four-day school week calendar compared with secondary schools that adopted the traditional five-day school week calendar. Across Missouri there have been a growing number of school districts that had the traditional school calendar and incorporated the four-day week calendar due to budgetary problems and teacher retention concerns (Finch et al., 2018a). Through a review of literature surrounding the topic, the researcher determined the three vital areas to investigate and compare for this research study were attendance, student achievement, and school climate. Attendance in some school districts was determined to be a high predictor for student success (Van Eck et al., 2017). Student achievement level outcomes, particularly those implementing the four-day school calendar, varied with some school districts experiencing improvement in achievement and other schools facing declines (Weldon, 2008). School climate was found to play a role in teacher effectiveness according to Hattie (2003), who wrote teachers who were happier performed better in the classroom. The need for further research involving the four-day school week was discussed by Tharp et al. (2016), in order for the effects of the four-day week to be determined and more fully understood. The researcher investigated these effects by comparing APR scores in achievement levels and attendance rates between four-day and five-day secondary schools. The researcher also compared the perception of school climate from teachers' working in both calendar situations. To address the research questions, the researcher collected data from each schools' APR scores, as well as data from individual teacher responses to the OCI survey from the sample of secondary schools within the study. In order to achieve the purpose of the

study, the researcher sought to answer three essential questions. The research questions and the outcomes of the study will be discussed in this chapter. The researcher will also discuss the conclusions of the findings, the implications for practice, recommendations for further research, and finally summarize the findings.

Research Questions and Hypotheses

The following research questions guided the study:

RQ1: Is there a significant difference in secondary schools' attendance scores on the APR between schools that participated in the four-day school week and the five-day school week?

H1_a: There is a significant difference in secondary schools' attendance scores on the APR between schools that participated in the four-day school week and the five-day school week.

H1_o: There is not a significant difference in secondary schools' attendance scores on the APR between schools that participated in the four-day school week and the five-day school week.

RQ2: Is there a significant difference in secondary schools' academic achievement level scores on the APR between schools that participated in the four-day school week and the five-day school week?

H2_a: There is a significant difference in secondary schools' academic achievement level scores on the APR between schools that participated in the four-day school week and the five-day school week.

H2₀: There is not a significant difference in secondary schools' academic achievement level scores on the APR between schools that participated in the four-day school week and the five-day school week.

RQ3: Is there a significant difference in organizational climate between schools that participated in the four-day and the five-day week?

H3_a: There is a significant difference in organizational climate between schools that participated in the four-day and five-day school week.

H3₀: There is not a significant difference in organizational climate between schools that participated in the four-day and five-day school week.

Findings

The first research question addressed whether there was a significant difference in the APR attendance rates between secondary schools in Missouri that observed either the four-day versus the five-day school calendar. To investigate the possible differences and the significance, the researcher collected data from the participating schools' APR attendance rate scores from the MoDESE (2018a) website. Five of the schools observed the four-day school week calendar and five of the schools observed the five-day school week calendar. The APR attendance rate scores for the five-day secondary schools were found to be higher on average than the APR attendance rate scores for the four-day secondary schools. The average score for the 2015 school year for participating four-day schools was 8.9 out of 10 possible compared to a score of 9.9 for the five-day schools. The data from the 2016 school year followed a similar pattern. Four-day schools reported a score of 7.2 while the five-day schools received a score of 9.5.

In order to determine whether a statistically significant difference existed between attendance rate APR scores for each of the participating groups, the researcher used a test of statistical significance. This involved finding a mean score for the APR attendance rates for both the four-day secondary schools as well as the five-day secondary schools and comparing them using a *t*-test for the 2015 and 2016 school years. The results of the *t*-test were $t = 0.11$. The results of the *t*-test did not meet the critical value of Critical *t*, which was 1.73. Therefore, the researcher did not reject the Null Hypothesis of Research Question One, which stated there was not a significant difference between the two means. While the researcher found an observable difference in the scores of the participating secondary schools' attendance APR data, which indicated the five-day secondary schools had higher attendance rates, the difference was not determined to be statistically significant. By finding this value the researcher was able to conclude there was not a significant difference between students' attendance rates in Missouri secondary schools that participated in either of the two school calendars.

The second research question focused on whether a significant difference existed between the APR academic achievement levels of the schools participating in the study. The researcher addressed the question by collecting the APR achievement level data for each of the participating schools from the MoDESE (2018a) website. The investigator used APR achievement level data from the participating schools from the 2015 and 2016 school years. Of these schools, the five-day secondary schools' APR scores for achievement level were slightly higher on average than the four-day schools' scores. The average APR scores for the participating four-day schools for the 2015 and 2016 school year were 50.8 and 52. The five-day schools involved in the study reported average

scores for the 2015 and 2016 school years of 51 and 52.6. These results indicated a small advantage in APR achievement level scores among the five-day schools who took part in the study.

In order to determine whether a significant difference existed between the two samples of schools, a statistical test was needed; the researcher chose to use a *t*-test. The researcher compared the two samples by finding a mean score for the 2015 and 2016 school year APR achievement level rates from both sets of schools. The researcher compared the means using a *t*-test. The results of the *t*-test were $t = 0.14$. The results of the *t*-test failed to meet or exceed the critical value of Critical *t*, which was 1.73. Based on the results of the *t*-test, the researcher did not reject the Null Hypotheses for Research Question Two. The Null Hypothesis for the second research question indicated no significant difference existed. The researcher found that an observable difference existed between the two samples of secondary schools due to higher average scores of the five-day sample schools.

The third research question addressed whether a significant difference in teachers' perceptions of school climate existed between the two samples of secondary schools. The researcher examined the question by collecting 70 responses to the OCI survey from teachers who participated in the study. The survey results were collected through an online survey tool, Survey Monkey which scored each response on a 4-point Likert-type scale from one to four (Survey Monkey, 2018). Due to the confidential nature of the survey, the researcher was unable to identify which secondary schools the participants were employed by. This could have led to the survey results being skewed toward one secondary school or another and not necessarily an even representation. The OCI

consisted of four dimensions of school climate which were collegial leadership (CL), professional teacher behavior (PBT), achievement press (AP), and institutional vulnerability (IV) (Hoy et al., 2002). Through the Survey Monkey website, the researcher was able to retrieve the average 4-point Likert-type scale response to each question from the participants in a four-day secondary school and the five-day secondary school.

The participants' responses provided a quantitative understanding of how teachers viewed school climate in both categories of secondary schools for each dimension of the OCI. In order for the data to have statistical meaning, a standard score was applied. The researcher accomplished this by following the formula for each dimension noted by Hoy et al. (2002). The standard score for each dimension of the OCI allowed the researcher to use a numeric value to compare teachers' perceptions of school climate in their respective schools. Overall, the researcher observed teachers' perceptions of school climate were more positive in the four-day secondary schools. This was true in the first three dimensions of the OCI. In the first three dimensions, which included (CL), (PTB), and (AP) a higher score indicated a more positive climate. In the last dimension, which was (IV), a lower score was associated with a more positive climate. For (CL), participating four-day schools scored 651.99 compared to 577.50 scored by the five-day schools. This score reflected teachers' perceptions of how well their needs were being met and how they were treated by school leaders (Hoy et al., 2002). The four-day schools scored 688.81 compared to a score of 582.23 from the five-day schools in the (PTB) dimension. This score echoed teachers' perceptions of faculty cooperation and mutual respect among colleagues (Hoy et al., 2002). For the dimension of (AP), the four-day schools scored

564.20 and the five-day schools scored 500.85. This score was an indication of how teachers perceived their schools prioritized high academic achievement (Hoy et al., 2002). The four-day schools scored higher with a 369.76 in the final dimension analyzed. This was just over 10 points higher than the five-day schools that scored 359.09 in the (IV) dimension. This comparison showed teachers of the participating five-day schools perceived slightly less vulnerability from outside organizations than the four-day teachers. While these differences were observed through the research study, they did not constitute a significant difference between teachers' perceptions.

For the researcher to determine whether a significant difference existed, a statistical test was used. The researcher chose a *t*-test to conclude whether a significant difference existed. The mean standard scores for each dimension of the OCI from the schools included in the study were analyzed using a *t*-test. The results of the *t*-test were $t = 0.02$. The results of the *t*-test did not meet or exceed the value of Critical *t*, which was 1.66. Therefore, the Null Hypotheses for Research Question Three was not rejected which concluded a statistical significance did not exist. The four-day school week responses scored higher in all four dimensions of the OCI. This showed school climate was found to be more positive in three out of the four dimensions, according to Hoy et al. (2002). The researcher found that an observable difference existed in school climate between the four-day and five-day sample schools, however, the researcher concluded there was no significant difference between teachers' perceptions of school climate in the participating secondary schools.

Conclusions

Conclusions were based on the analysis of data in this study. As Finch et al. (2018a) noted, many Missouri school districts have changed their school calendar to observe the four-day school week. In the findings of Tharp et al. (2016), the researchers argued the need for future research to determine the effects of the four-day school week on student achievement. Gruenert and Whitaker (2015), placed an emphasis on the importance of school climate and its effect on student achievement as well. This drove the author to attempt to answer the research questions of this study in order to determine whether and to what degree the four-day school week differed from the five-day school week in achievement level, attendance rates, and climate. While the researcher concluded there was not a significant difference between participating schools' calendars, there were observable differences.

The researcher observed differences between the participating four-day and five-day secondary schools in all three of the tested areas, which included attendance rates, achievement levels, and perceptions of school climate. An observable difference existed in the APR attendance level scores between the two different school calendars. The researcher also noted an observable difference between the APR achievement level scores between the two samples of secondary schools. In both of the areas tested, the five-day school week had superior APR scores. These findings were similar to those found by Maxey (2018), which showed a negative relationship between schools that switched to a four-day school week and school grade cards. The results were also consistent with the findings of Tharp et al. (2016), who found that elementary students' achievement levels decreased after two years of the four-day calendar. The results of this

research study suggested that the secondary schools using the four-day school week do not experience the same level of success in student attendance rates or academic achievement levels as the secondary schools using the traditional five-day week.

There could be a number of reasons for each individual school to have received the APR scores in which they did. Maxey (2018) noted the difference in student scores could be the result of the gap which already existed between rich and poor students, which reflected the socioeconomic demographics of the districts. Hattie (2003) described there were many variables such as feedback from teachers and relationships with teachers that could have had an effect on student performance in an educational setting.

The observable differences in the APR scores between the two groups of secondary schools in the study could be explained by factors other than the type of school calendar used. The four-day schools involved in this study had been participating in the four-day school week for no more than eight years and for the majority of school districts, less than four years. The positive motives for implementing the four-day school calendar listed in earlier chapters may not have had sufficient time to affect the four-day schools in this study. These particular four-day schools could have been in the early stages of professional development activities which had not yet filtered down to the classroom setting. These school districts could also have new staff who had not attained the level of experience of some veteran teachers as a result of implementing the four-day school week, thus contributing to the results.

Socioeconomic status of the schools was another factor to consider when analyzing the outcomes of this study. The school districts in this study had similar free and reduced meal rates, 45.68% for the four-day secondary schools and 48.54% for the

five-day schools. However, with the five-day schools having reported a higher average free and reduced meal rate, socioeconomic status of the secondary schools could be eliminated as a reason for this outcome. For this particular study the researcher determined the APR results of this study were not likely the result of the type of school calendar used. The factors discussed could have also had an impact on teachers' perceptions of school climate within the schools used for the study.

The OCI scores were used to gain an understanding of how the teacher participants perceived their school at a given time (Hoy et al., 2002). The investigation performed through statistical analysis allowed the researcher to develop a better understanding of the comparison between the four-day school week and the five-day school week in attendance, achievement and school climate. However, the observed differences in teachers' perceptions of school climate between the secondary schools involved in this study, in which the four-day schools demonstrated a more positive school climate in three of the four dimensions of the OCI, suggested a more positive climate among the four-day schools. There could also be several reasons teachers perceived their schools' climate a certain way at any given moment (Hoy et al., 2002). Teachers' perceptions of (CL) rested heavily on how teachers felt about their school's leader. Also, (PTB) involved how teachers' perceived relationships with co-workers. The results of both dimensions could have been greatly impacted by interactions participating teachers had with either a leader or colleague before they took the survey and may not have produced a reliable indication of the schools' perceptions as a whole. The results of (AP) and (IV) were more integrated in teachers' perceptions of the school as an organization and less on individuals within the school. Four-day schools appeared particularly

vulnerable to criticism from outside groups (Cummings, 2015). This was confirmed in the study, as four-day school teachers' perceptions of (IV) was the only dimension of school climate that was found to be less positive than the five-day schools. This could also be an underlying factor for the inferior APR scores in the areas of attendance rates and achievement levels for the four-day secondary schools involved in this study.

Implications for Practice

The significance of this study was to determine whether a statistically significant difference existed between Missouri secondary schools that participated in the four-day school week calendar or the five-day school week calendar. This study made contributions to school leaders in Missouri by providing an in-depth analysis of academic achievement levels, attendance rates, and teachers' perceptions of school climate in secondary schools that observed the two differing school calendars. It provided district leaders with quantitative evidence, which showed no significant impact on school districts who have used the four-day school week when moving forward with discussions and decisions about the four-day school week in their own schools in Missouri.

While school staff and parents of students both shared positive perceptions of the four-day week in some schools, there was little known about the effects on students' achievement (Finch et al., 2018a). This was echoed in the other parts of the country by school district leaders who cheered rising teacher retention rates and rising attendance rates but knew little of the actual impact on students' performance in the four-day calendar (Weldon, 2008). The researcher found overall, the differences between the four-day school week calendar and the five-day school week calendar, when comparing attendance rates, achievement levels, along with school climate were not statistically

significant. School district leaders must recognize that each school district could be unique. Furthermore, district leaders must assess the needs of their individual school district before making a decision to move toward implementation of the four-day school week. This would include determining the current academic achievement levels of the district, as well as the attendance rates of the district. School district leaders should also look at finances to determine whether implementing the four-day week could have a positive impact the budget. As Finch and Turner (2018) wrote, many districts began to move to the four-day school week because of budgetary concerns because it allowed them to cut their spending. As noted by Tharp et al. (2016), further research should be done by school district leaders considering the adoption of the four-day school week to determine whether and to what degree it affected student achievement levels. School district leaders should consult with other school districts of like size and similar demographics that have adopted the four-day school week in order to determine what specific effects the move has had on those districts and whether a calendar change would prove effective.

Recommendations for Future Research

One of the most important aspects of the four-day school week that was revealed in this study was the differences in sample schools' APR achievement level scores. This was also true of the APR attendance rate scores as well as the differences in teachers' perceptions of school climate between the sample four-day secondary schools and the five-day secondary schools. While none of the differences were found to be statistically significant, it was important to note that the five-day secondary schools averaged higher APR mean scores in attendance rate and achievement level scores. It was also equally

important to note that the four-day sample secondary schools scored better in three of the four aspects of the school climate survey. The findings of this study built more curiosity around the subject of the four-day school week. Based on these findings the researcher recommends future research be conducted on the topic.

The first recommendation for future researcher would be to include a broader sample than a convenience sample and to compare all schools that participate in the four-day school week against all schools that participate in the five-day school week. Data could be collected in a similar fashion to this study to provide a broader look into the impacts of the four-day school week on academic achievement levels, student attendance rates, and school climate. The results could provide school district leaders with a more comprehensive understanding of the effects the four-day school week has had on Missouri schools.

The second recommendation for future research would be to include a student perception piece in the study. Van Eck et al. (2017) wrote students who perceived a more positive school climate performed better in the areas of academic achievement in a school setting. Student perception of the four-day school week could offer school district leaders a unique view into how students feel the calendar could affect them as well as their view of its impact on school climate. This could also be extended to include parents as their perceptions sometimes could have an effect on students.

The third recommendation for future research would be to compare academic achievement levels of four-day schools and five-day schools over a greater period of time, as well as to control for the socioeconomic status of the schools. Tharp et al. (2016), called for future research over time to explore the impact of the four-day school

week on achievement levels of students. This could provide school district leaders with more data to make more informed decisions regarding how to best meet the needs of their school districts.

Finally, the fourth recommendation for future research would be to compare individual advanced and proficient rates on standardized test scores from schools that participated in the four-day school week with schools that participated in the five-day school week. This type of study could provide a comprehensive examination of academic achievement levels from both samples of schools. The research brought forth from such a study would allow districts to focus on individual needs and weigh how the four-day school week could help them in meeting those needs.

Summary

The purpose of the study was to investigate how school districts using a calendar with four-day school weeks compared to school districts using the traditional five-day school week calendar. The researcher accomplished this by analyzing the APR scores in attendance rates and academic achievement levels from schools that participated in the four-day school week calendar and comparing them with APR scores from schools that participated in the five-day school week calendar. The researcher also compared teachers' perceptions of school climate by analyzing responses from the OCI from secondary schools that participated in the four-day and five-day school week.

The results of the analysis among the APR attendance rate scores found the four-day secondary schools involved in the study were outperformed slightly by the five-day secondary schools. The results of the analysis among the APR achievement level scores concluded that the five-day sample schools again scored higher than the four-day sample

schools. The results of the analysis among teachers' perceptions of school climate determined that the four-day teachers perceived a more positive climate in three of the four dimensions of the OCI than the five-day teachers. The researcher concluded that while observable differences were found throughout the research, none of the differences found between the four-day school week calendar and the five-day school week calendar were statistically significant.

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Appendix A

Organizational Climate Index

OCI

Directions: The following are statements about your school, Please indicate the extent to which each statement characterizes your school from **rarely occurs** to **very frequently occurs**.

	Rarely Occurs	Sometimes Occurs	Often Occurs	Very Frequently Occurs
1. The principal explores all sides of topics and admits that other opinions exist.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. A few vocal parents can change school policy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. The principal treats all faculty members as his or her equal.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. The learning environment is orderly and serious.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. The principal is friendly and approachable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Select citizens groups are influential with the board.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. The school sets high standards for academic performance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Teachers help and support each other.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. The principal responds to pressure from parents.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. The principal lets faculty know what is expected of them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Students respect others who get good grades.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Teachers feel pressure from the community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. The principal maintains definite standards of performance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Teachers in this school believe that their students have the ability to achieve academically.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. Students seek extra work so they can get good grades.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Parents exert pressure to maintain high standards.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Students try hard to improve on previous work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. Teachers accomplish their jobs with enthusiasm.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. Academic achievement is recognized and acknowledged by the school.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. The principal puts suggestions made by the faculty into operation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. Teachers respect the professional competence of their colleagues.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. Parents press for school improvement.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. The interactions between faculty members are cooperative.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24. Students in this school can achieve the goals that have been set for them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25. Teachers in this school exercise professional judgment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26. The school is vulnerable to outside pressures.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
27. The principal is willing to make changes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
28. Teachers "go the extra mile" with their students.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
29. Teachers provide strong social support for colleagues.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
30. Teachers are committed to their students.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Appendix B

Email Letter to Superintendents

October 30, 2018

Dear _____,

My name is Billy Daleske, I am the principal at John Boise Middle School in Warsaw. I currently pursuing Doctorate in Educational degree in the area of Administration from Lindenwood University.

My dissertation will focus on student attendance rates and academic achievement levels as measured in the Annual Performance Report (APR) from the Missouri Department of Elementary and Secondary Education. It will also focus on teachers' perception of school climate. Specifically, comparing rural schools participating in the four-day school week with rural schools participating in the five-day school week. I am seeking to determine if there is a significant difference between the two school calendars, when comparing academic achievement, students' attendance rates, and school climate.

I am seeking your permission for your district to participate in my study and allow me to utilize your district data in my research. To gather the data needed for my research I would need to do the following:

- Send an informed consent letter to you, which you will then forward on to the secondary teachers in your district inviting them to participate in a voluntary online survey. The survey will consist of 30 Likert-scale questions. The survey

will not require the teachers to provide any information that will identify your school district. They will simply be asked to state whether they are employed at a four-day school district or a five-day school district.

- I will use the Missouri Department of Elementary and Secondary Education website to access your school district's APR scores from 2015 and 2016.

Please know care will be taken to keep all information confidential during this process.

There will be no identifying results shared as a result of this study. I am also willing to provide the results of my research at the end of this study. Thank you for your time and consideration. If you have any questions regarding my research please feel free to reach me.

Thank you,

William Daleske

Appendix C

LINDENWOOD**Survey Research Information Sheet****Title of Research Project: Comparing Student Achievement and School Climate in Four-day and Five-day School Districts**

You are being asked to participate in a survey conducted by William Daleske under the guidance of Dr. Pam Spooner at Lindenwood University. The purpose of this study is to determine if there is a significant difference between perceptions of teachers who teach in a four-day school district and a five-day school district. Your participation will involve completing a short survey about school climate. The survey will include four sub-categories of school climate which are collegial leadership, professional teacher behavior, achievement press and institutional vulnerability. It will take about 5-6 minutes to complete this survey.

Your participation is voluntary. You may choose not to participate or withdraw at any time by simply not completing the survey or closing the browser window.

There are no risks from participating in this project. We will not collect any information that may identify you. There are no direct benefits for you participating in this study.

WHO CAN I CONTACT WITH QUESTIONS?

If you have concerns or complaints about this project, please use the following contact information:

William Daleske bdaleske@warsawk12.org

Dr. Pam Spooner Pspooner@lindenwood.edu

If you have questions about your rights as a participant or concerns about the project and wish to talk to someone outside the research team, you can contact Michael Leary (Director - Institutional Review Board) at 636-949-4730 or mleary@lindenwood.edu.

Continuing with this survey indicates that you have read this consent information and are willing to participant in this research. Control and Click to follow the link

Five-day School District Survey Link

<https://www.surveymonkey.com/r/N9CCQ8K>

Four-day School District Survey Link

<https://www.surveymonkey.com/r/N2T3BYJ>

Appendix D

Reminder Email Letter

October 30, 2018

Dear _____,

My name is William Daleske, and I previously invited you to participate in a school climate survey. The purpose of the survey is to provide data to be used in a comparative study between four-day school districts and five-day school districts. This letter is intended to serve as a reminder to please take 5-6 minutes and complete the survey if you have not done so.

Thank you,

William Gordon Daleske

Appendix E

LINDENWOOD

Survey Research Information Sheet

Title of Research Project: Comparing Student Achievement and School Climate in Four-day and Five-day School Districts

You are being asked to participate in a survey conducted by William Daleske under the guidance of Dr. Pam Spooner at Lindenwood University. The purpose of this study is to determine if there is a significant difference between perceptions of teachers who teach in a four-day school district and a five-day school district. Your participation will involve completing a short survey about school climate. The survey will include four sub-categories of school climate which are collegial leadership, professional teacher behavior, achievement press and institutional vulnerability. It will take about 5-6 minutes to complete this survey.

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Continuing with this survey indicates that you have read this consent information and are willing to participant in this research. Control and Click to follow the link

Five-day School District Survey Link

<https://www.surveymonkey.com/r/N9CCQ8K>

Four-day School District Survey Link

<https://www.surveymonkey.com/r/N2T3BYJ>

Vitae

William Daleske

William Daleske has been a public-school educator for the past 10 years. He has taught physical education, health, middle school science, high school weights and has served as an assistant football and wrestling coach. He became the head wrestling coach for Warsaw High School in 2010 and continued for five seasons.

The first four years of his career were spent in the classroom, followed by four years as assistant principal and athletic director for Warsaw High School. He currently serves as the Middle School Principal for the Warsaw R-IX School District and has been in this role for two years.

He earned a Bachelor of Science Degree in Education from Central Methodist University in Fayette, Missouri; a Master of Education Degree from William Woods University in Warrensburg, and finally, a Specialist Degree in Educational Administration from William Woods University.