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THE EFFECTS OF BLOCK SCHEDULING ON STANDARDIZED TEST SCORES

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Kimberly Rorie



# The Effects of Block Scheduling on Standardized Test Scores

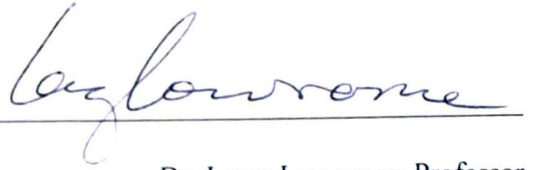
Field Study  
Presented to  
The College of Graduate Studies  
Austin Peay State University  
In Partial Fulfillment  
Of the Requirements for the Degree  
Education Specialist

Kimberly Rorie  
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To the College of Graduate Studies:

We are submitting a field study written by Kimberly Rorie entitled "The Effects of Block Scheduling on Standardized Test Scores." We have examined the final copy of this field study for form and content. We recommend that it be accepted in partial fulfillment of the requirements for the degree of Education Specialist, with a major in Curriculum and Instruction.



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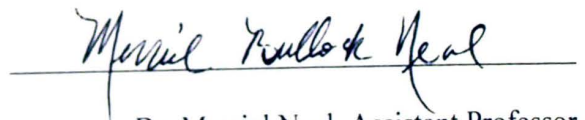
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## **Abstract**

### **The Effects of Block Scheduling on Standardized Test Scores.**

This study researched the efficacy of blocked Reading and English classes on standardized test scores. The study focused on two teachers who taught both traditional classes and blocked classes in the same school. All of the students had been in traditional English-Language Arts classes during their seventh grade year. Some of these students were placed in traditional classes in eighth grade and some were placed in blocked classes during their eighth grade year. The data presented addressed teacher data, relationships of scheduling to achievement, minority students compared to majority students in achievement, and male students compared to female students in academic achievement.

The results showed that there was a considerable amount of growth on test scores for students engaged in both types of scheduling. This information led to the conclusion that instruction in one type of scheduling is not more effective than the instruction in the other type of scheduling. As a result, both types of scheduling were extremely effective in the educational growth of the students. There was also no statistically significant difference in the scores of minority compared to majority or males compared to females. Significant results were found when looking at gains in NCE mean scores from 7<sup>th</sup> grade traditionally scheduled instruction in the 8<sup>th</sup> grade when taught following the same schedule. While substantial improvements were noted when children were moved from traditional to block schedules in the 8<sup>th</sup> grade, the difference was not statistically significant.



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## **Chapter I**

### **Introduction**

For over a decade, school administrators have been urged to examine schedules and strategies to increase student performance. There is a very limited amount of data on the effects of block scheduling on standardized test scores available. The data that is present is inconclusive at best.

Accountability has become increasingly important because the federal demands for continuous improvement represented through state mandated tests. All of this has to be completed with limited resources due to elevated financial demands throughout school systems. It is crucial to have current data available to school leaders that address accountability associated with No Child Left Behind Act of 2001.

Accountability in Tennessee is assessed after determining school growth through Adequate Yearly Progress (AYP) reports. If schools continuously fail to meet the AYP goals, the state has the right to take over school systems. All resources are critical including financial, buildings, and materials. It seems to be a natural conclusion that with these demands, schools will examine different options related to the time in a class.

### **Problem Statement**

The efficacy of block scheduling in high school has been debated, and since the enactment of No Child Left Behind, it is important to add to the limited research concerning the impact of block scheduling on standardized test scores. Most studies that are available were completed in high schools. The number of studies completed in middle schools is extremely limited.



## **Purpose of the Study**

The purpose of this study was to determine the effects of block scheduling on standardized test scores. This study consisted of students in a traditional setting and students in blocked reading and language classes. This study analyzed the annual growth of students in a blocked reading and language class as compared with the same data on students on a traditional schedule. Students in the blocked class and traditional class had the same teacher. Test scores analyzed were from the state mandated tests for the 2009-2010 and 2010-2011 academic years. The ultimate goal was to provide information directly related to student growth during the year. This was to aid the school in making the right scheduling decisions. Since the teachers in this study taught traditional classes as well as blocked classes, the teacher quality variable is removed. This study analyzed student achievement data on 8<sup>th</sup> grade students from before and after the implementation of the block language arts classes.

## **Significance of the Study**

This study was significant for the staff at the participating school because it was intended to directly guide them in making appropriate scheduling choices. The research in the literature available was inconsistent. This study provided the participating school with the information needed to decide if blocked reading and language courses were effective. Although this study was used to guide decision-making within the participating school, it also contributed to the available research of the effectiveness of blocked classes on student academic achievement. By adding to research, other educators may find the information beneficial to their specific circumstances and address some of the concerns of altering student schedules.

## Research Questions

1. Was there a significant difference in TCAP scores for students in the blocked classes from students in the traditional classes taught by the same teacher in grade 8?
2. Was there a significant difference in TCAP average gain/loss (NCE) scores from students in traditional classes in grade 7 to blocked classes in grade 8?
3. Was there a significant difference in TCAP average gain/loss (NCE) scores from students in traditional classes in grade 7 to traditional classes in grade 8?
4. Was there a significant difference in TCAP average ELA gain/loss (NCE) scores in traditional classes in grade 7 to blocked classes in grade 8 from traditional classes in grade 7 to traditional classes in grade 8?
5. Was there a significant difference in standardized test scores for the minority students from the majority students who participated in blocked classes and traditional classes in grade 8?
6. Was there a significant difference in standardized test scores for the male students from the female students who participated in blocked classes and traditional classes in grade 8?

## Hypotheses

This study tested the following hypotheses:

Hypothesis 1: There will not be a significant difference in TCAP scores for students in the blocked classes from students in the traditional classes taught by the same teacher in grade 8.



Hypothesis 2: There will not be a significant difference in TCAP average gain/loss (NCE) scores from students in traditional classes in grade 7 to blocked classes in grade 8.

Hypothesis 3: There will not be a significant difference in TCAP average gain/loss (NCE) scores from students in traditional classes in grade 7 to traditional classes in grade 8.

Hypothesis 4: There will not be a significant difference in TCAP average ELA gain/loss (NCE) scores in traditional classes in grade 7 to blocked classes in grade 8 from traditional classes in grade 7 to traditional classes in grade 8.

Hypothesis 5: There will not be a significant difference in standardized test scores for the minority students from the majority students who participated in blocked classes and traditional classes in grade 8.

Hypothesis 6: There will not be a significant difference in standardized test scores for the male students from the female students who participated in blocked classes and traditional classes in grade 8.

### **Limitations of the Study**

The school where the research was conducted in this study, demographically, was almost exactly 50% minority and 50% majority. There were 41 participants in the blocked classes and 73 in a traditional class setting. This school had only implemented blocked reading and language for one academic year. The data collected was analyzed for any differences in standardized test scores for students in blocked classes and traditional classes taught by the same teacher. Results are only valid or comparable for schools with similar demographics and sample size. The school participating in this study

had a student body that is 55% military dependents. This is a very transient student population, therefore some data may not be available for all students.

### **Definition of Terms**

1. Alternate (A/B) block schedule- eight classes of approximately 90 minutes that students attend. Four classes meet on the first day, day A, while the other four meet on the second day, day B. This alternating schedule meets the entire school year.
2. Annual Yearly Progress (AYP)- Under No Child Left Behind (NCLB), schools and school districts are measured on whether the students meet performance benchmarks in math, reading and attendance for grades 3-8 and math, English and graduation rate for high schools.
3. Block schedule or classes- in this school day format, four classes of approximately 90 minutes meet daily. In this study, the students meet only for reading and language arts for the extended amount of time.
4. Middle School Student- In this study, student only in grades 6-8 will be in this category.
5. No Child Left Behind (NCLB)- In January of 2002, President George Bush signed the No Child Left Behind Act. This act reauthorizes and amends federal education programs established under the Elementary and Secondary Education Act. The focus of the NCLB Act is for historic school reform based on accountability, flexibility, research-based education, and parent options.



6. Normal Curve Equivalent (NCE)- are useful for evaluating group performance. They range from 1 to 99, as do percentile ranks. Unlike percentiles, NCEs may be averaged because they are on an equal-interval scale. That is, the difference between any two successive NCEs has the same meaning educationally throughout the scale. A one-point interval at the lower end of the scale is equivalent to a one-point interval in the middle or at the top of the scale. For each subject and grade level, the norm group mean (average) NCE is 50. If a student has a score of 70 one year and a 70 the next year, one year's growth is accrued.
7. Student achievement- refers to the progress of middle school students as measured through TCAP and as identified in the raw and performance scores in the areas of selected response.
8. Tennessee Comprehensive Assessment Program (TCAP)- Students in grades 3-8 take the TCAP each spring. The achievement test is a timed, multiple choice assessment that measures skills in reading, language arts, mathematics, science, and social studies. Student results are reported to parents, teachers, and administrators.
9. Traditional Schedule- This school day format schedules time in six, seven, or eight periods. This school has seven periods that meet 48 minutes each.

## **Assumptions**

The following list of assumptions was considered for this study:

1. Student's responses to questions on state tests accurately reflected the achievement of each individual.

2. Student's experienced state mandated test administration procedures as outlined by the State of Tennessee within an appropriate and acceptable environment.
3. Students received appropriate instruction in block and traditional classes as outlined by Tennessee State Standards and Framework.

## Chapter II

### Review of Literature

The middle school years are a turbulent time when adolescents struggle between being a child and being an adult. “As schools shape their curriculum, culture, and student schedules to meet the varying needs of these middle years, they must also fulfill the increasing demand for higher standardized test scores” (Faulk, 2009). Currently there is limited research on the effects of block scheduling on middle school students and their achievement scores.

One of the issues raised in school reform is time (Forman, 2009). This has been discussed in detail concerning the school day and school year. This has been in an effort to find the most effective way to educate students. “Facing limited resources, the only means by which today’s educator and administrator can improve instruction is the reallocation of the resources at hand (fiscal, spatial, and temporal) in more efficient structures” (Stanley, & Gifford, 1998). These researchers went on to state that because of the financial limits, educators have to figure out different ways to improve student achievement in the time that is already set.

There were five types of schedules discussed in the review literature. Traditional schedules were the schedules where students participate in six, seven, or eight classes that last an entire school year (Norton, 2010).

Four by four (4x4) schedules were where the students attended four classes for an extended amount of time for one semester. In this type of schedule, the students’ would attend different classes the first semester than those in the second semester (Carroll,



1990). Teachers taught a total of six classes during the year but only three classes each day.

A/B scheduling was where students attended classes every other day for extended periods of time for the entire school year (Canady & Rettig, 1995a, p. 23). A total of eight classes are attended throughout the day, but students only attended four classes each day. Although there are day-to-day gaps in instruction, it offered the advantage of meeting for the entire year.

Trimesters (Porter, 2002) were where students were enrolled in five classes for approximately sixty days, or twelve weeks. Class periods were 70 to 125 minutes long. Some electives that need to meet for the entire year, meet for 60 minutes each day. These included subjects like band, yearbook, chorus, and newspaper. A typical teacher load is four classes a day, with about twenty-five students in each class.

Lastly there was the mixed block schedule. This was where the students had one, two, or three block classes and two or three traditionally scheduled classes (Childers & Ireland, 2005).

### **The History of Block Scheduling**

According to Smith (2010) high schools were free from the rigorous and rigid schedules until the late 1800s. It was then that school schedules were divided into five or six main academic areas. She then discussed the different efforts to restructure the school day and schedule; at first for vocational purposes and then for the core academic subjects. Block scheduling was first introduced as a solution to increased pressure on the academic schedules.

Block scheduling has been around for decades. Modular scheduling took place in the 1960s and 1970s (Ford, 2002). Lloyd Trump and others initiated the movement in the early 1960s along with team teaching (Fletcher, 1997). During the 1970s, high schools across the country adopted schedules similar to the four period day.

Block scheduling came into existence through many different formats. Vocational schools throughout the United States have used double periods and extensions of time for decades (Faulk, 2009). It was not until the 1980s that teaching strategies started being adjusted in these larger blocks of time to meet the needs of the students.

According to Ford (2002), all accredited public and private school principals in the United States were surveyed in the spring of 1993. The results indicated that over half of the schools were using or considering the use of block scheduling. They further indicated that by the 1996-1997 school year, 75% of schools would be using some form of block scheduling.

In January of 2002, President Bush made educational history by signing the *No Child Left Behind Act of 2001* into law. This was an attempt to close the loopholes in educational legislation. “Since the inception of the *No Child Left Behind Act (NCLB)*, school districts around the country have worked to increase student achievement as the benchmark for satisfactory achievement continues to rise” (Faulk, 2009).

The mandates of the NCLB Act of 2001 related to accountability for student learning have placed a great deal of pressure on educators to redesign and reform the school schedule to improve instruction which in turn improves student academic achievement (Norton, 2010).

There are differing forms of block scheduling and achievement scales which have generated various results and implications of the effectiveness of block schedules on student achievement. Faulk (2009) stated “It is important to remember that each study is unique and offers limited generalizability to other school settings.”

Traditional schedules at the middle school level typically entail six to eight class periods per day ranging in length from 40 to 55 minutes with three to five minutes for changing classes. In the traditional middle school schedule, Carroll (1990) argued that student learning often took a back seat to content of a course that teachers must “get to” in a school year. Pacing often seemed rushed as teacher struggled to keep up with pacing guides and standards to be taught in a 40 to 55 minute class period.

According to Faulk (2009), discipline issues arise and bullying is more likely to occur during the time between classes. She also stated that students are often late to class and time in class is for lesson warm up review, and bringing a lesson to closure.

## **Reform**

Lawrence & McPherson (2000) stated that educational restructuring was an effort to meet society’s expectations and to make better use of knowledge. This was happening through restructuring the school calendar and time in classes. The major question raised by educational analysts is what is wrong with the traditional six or seven period day (Ford, 2002). Carroll (1990) stated, “There is nothing wrong with the traditional schedule except that it prevents teachers from teaching well” (p. 26).

“Most restructuring efforts—site based management, team teaching, cooperative learning, alternative scheduling—are simply tools educators can use to get more authentic learning” (Conley, 1994, p.21).



Reform movements, regardless of their beginning, have mainly been directed toward the era of instruction. Ford (2002) stated that educational reform helps schools accomplish their goals more effectively by replacing some programs or practices with better ones. Norton (2010) noted that reform is an effort to seek to ensure that all students graduate ready to become productive members of society and the workforce.

Smith (2010) stated that block scheduling has been implemented in an array of ways. What started out as a way of increasing class time and maximum opportunities to learn became a reform strategy while being tweaked and twisted in every way imaginable.

The National Middle Schools Association published *This We Believe* in 1995 that made recommendations about proven practices that meet the developmental needs of middle school students (National Middle Schools Association, 1995). During the study, the National Middle Schools Association found that many of the schools being studied already had many of the recommended practices in place.

Some of those recommendations were that students and teachers were organized into teams that supported the multidisciplinary approach to learning; there were advisory groups, and positive school climates. The committee also found that the 45 minute periods cause more stress for the students and teachers. Results showed that the increased amount of homework, the pull out for remedial classes, increased expectations, and lack of time to go in depth during the class time in the traditional schedule were no longer meeting the needs of the middle school students.

The block schedule requires students to participate in four classes rather than seven or eight for extended periods of time. This practice has been in place in high

schools since the 1990s, but there has been little research at the middle school level (Faulk, 2009).

Lewis (1999) offered some suggestions on steps to take for the successful implementation of the block schedule. The first recommendation was that implementation should take place only if it is the best for the students involved and not for other unimportant reasons. Secondly, Lewis suggested that considerations should be made for other areas that may be affected by the switch such as the budget. The next consideration should be that the faculty must understand the change process; what will happen and how it will happen.

Some additional guidelines to consider are communicating the process to all involved parties, consulting sources outside of the school: journals, books, etc., administrators should address faculty concerns, consider how this will affect the evaluation process, and finally Lewis stated that celebrations of success are important. Lewis also noted that the requirements for success should be decided upon before initializing the extended schedule so that for data collection purposes a baseline could be established.

### **Advantages**

Block scheduling is a deviation from the traditional schedule. More in depth teaching and learning can take place during the extra time that a student is with a teacher. Schedules with the most flexibility allow teachers to make educational decisions based on the content and the learning and activities taking place in the classroom. “Block scheduling is said to be the most flexible scheduling option at the middle school level because of the many models that have evolved” (Faulk, 2009).

Queen (2008) found that block scheduling showed many advantages over a traditional schedule. In his survey of schools that may have transitioned to block scheduling, he wrote,

I found the following advantages most often: increased instructional time, smaller classes, fewer classes to prepare for, more in-depth study of concepts, a decrease in the number of discipline problems, increased student-teacher interaction, students and teachers getting to know each other better, students earning more credits per year, increased planning time for teachers, better grades earned by students, and an opportunity for students to take more electives (p. 49-50).

Ford (2002) stated that teachers at school that have implemented the block schedule have the opportunity to more actively engage their students by using “experiments, simulations, writing, seminars, and other forms of active learning, as opposed to merely lecturing students.”

Tenney (1998) stated that some of the advantages to block scheduling included: the reduction of class changes would decrease discipline problems; the longer class periods would give students time to become more involved in the lesson; students and teachers have time to get to know each other; improved attendance; and improved grades.

Gruber & Onwuegbuzie (2001) found that although there was no statistical difference in GPA and writing scores, block scheduling did have a significant difference in the Language Arts, Science, Math, and Social Studies sections of standardized test scores. They reported that the students did not increase as much in Language Arts as they did in Science, Social Studies, and Math, but the students’ scores did increase from their scores on a traditional schedule.



Norton (2010) noted that there was a significant increase in English Language Arts test scores over a three year period after implementing block scheduling. She also recorded that there was no difference between the first and second year for math, but there was a significant increase in those scores on the third year.

Forman (2009) found that after the implementation of the block schedule, the percentage of students passing the standardized tests required for graduation increased by 15% over the first two years.

Trenta & Newman (2001) found that there was a that block scheduling had a positive effect on students grade point averages and standardized test scores. There was not enough information to conclude that there was a positive impact on attendance and ACT scores.

Griffin & Nicholson (2002) indicated that the students felt that they had more control over their learning, and that they were learning more in the block scheduling format. Teachers, students, and administrators thought that the learning was deeper and the learning situation more satisfying than the traditional seven period day. They also found that even though the analysis of grades did not indicate a change, there were more students on the honor roll lists and fewer students on the at-risk lists (2 or more Fs). There were no changes in the number of disciplinary occurrences, but there was a reduction in the number of absentee students.

Smith (2010) stated that students who received blocked instruction scored significantly higher in Algebra and Biology than those who received traditional instruction. The results also showed no significant difference between block and non-block students in language arts and reading and U.S. History.

Creamean & Horvath (2000) noted that the longer class periods allowed students to spend the needed time in each subject area to develop communication and critical thinking skills. Their study also showed that student attendance rates increased for the first two years after implementation, but the students had so many credits that the last semester of the fourth year students attendance dropped. The number of discipline referrals and suspensions decreased, but there was no significant change in student grades.

Porter (2002) declared that the use of block scheduling had the potential to reduce class sizes and required less staff. Block scheduling added more possible meeting times and longer planning periods for teachers.

Smith (2010) discussed the importance and impact of the accountability aspect. The problem statement was that the previous research on the effects of block scheduling on achievement scores has been not been consistent or conclusive. She used state test scores to measure the effectiveness of block scheduling in middle schools and high schools.

### **Disadvantages**

The research indicated that there have been many disadvantages found. According to Ford (2002), some critics have said that 90 minutes is too long to be in one class. Ford also stated that the 4x4 block schedule created a problem with student transferring into the school from a traditional schedule. It could also create a problem for a student transferring from the block schedule to a traditionally scheduled school.

One of the common disadvantages or concerns found throughout the research was that when students missed one day of class, it was the same as missing two days on a

traditional schedule. Lawrence & McPherson (2000) reported that students scored significantly higher with the traditional schedule as opposed to the block schedule in Algebra, Biology, English I, and U.S. History in a North Carolina high school.

Griffin & Nicholson (2002) noted that although teachers had the opportunity to conduct more in depth activities and discussions, most were not taking advantage of the allotted time. They recorded some of the off task behaviors in students were their heads being down, sleeping, and socializing with friends. This appeared to be a result of poor planning and pacing of the lessons. Their results also indicated that discipline problems were a result of the lack of classroom management and there was a need for further professional development and training in the use of more innovative teaching strategies.

Marchant & Paulson (2001) stated that lower achieving students thought school was important had the lowest grades and test scores, and they also had the most difficulty adjusting to the schedule and its demands.

McCoy & Taylor (2000) stated that in their study teachers said staying organized was difficult, and good time management was needed.

According to Nichols (2000) some of the concerns for high schools students were some students do not retain information for sequenced class because the time between those classes was sometimes extensive. He also stated that there were increased financial implications with this schedule and that there were decreased class minutes overall.

Zepeda & Mayers (2001) conducted a study on how first year teachers handle being introduced to the block schedule. They found that the teachers had trouble adjusting instruction for the extended time, transitioning activities, and assessing student progress. This also contributed to discipline problems, classroom management issues,



and appropriate planning concerns. It was suggested that materials be provided to new teachers in this situation and professional development should be given to help these teachers learn to plan, manage time and a classroom, and use coaches or mentors.

Stanley & Gifford (1998) stated that the block schedule allows for less coverage of content, and should not be used in areas where state standards and test scores are important. They also noted that while motivated students excel in this type of environment, the less motivated students can fall further behind.

Vermillion (1998) noted that there are some disadvantages for teachers also. These include changes to the type of lessons planned, curriculum and pacing changes, and the alteration of instructional methods.

Smith (2010) stated that one of the disadvantages of the block schedule is Advanced Placement (AP) course scheduling and the timing of standardized tests. She also noted that students had time to forget important information if their AP course ended in December and their standardized tests were not taken until the end of the second semester. Conversely, it was also stated that if students were in the AP course when the standardized test took place, students were missing a substantial amount of the knowledge required for these tests.

### **Professional Development**

“The success of a new block schedule implementation is dependent on the levels of preparedness of the teachers. The decision to move to a block schedule needs to include all stakeholders and include teachers, students, parents, community members and administrators” Faulk (2009). The implementation of a new school schedule will not

change schools by itself. What goes on in a teacher's classroom is still the most important variable (Ford, 2002).

The research has indicated the schools that did not perform as well did not have adequate training on how to utilize the time to best meet the needs of the students. In the study completed by Forman (2009), he noted the success of the block schedule was due in part to the extensive professional development provided to the teachers. The training was offered by staff members and addressed a variety of topics included strategies to teach to the students' different learning styles.

Conversely Nichols (2000) noted in one of the high school he studied, there was very little support and the lack of adequate professional development made the switch to block scheduling "problematic at best." The data indicated that this school decreased in graduation rates, GPAs, and attendance rates after the implementation of the block schedule. He also noted that in the other schools in his study where the teachers had adequate training and support, significant increases in attendance, graduation rates, and GPA were seen.

Norton (2010) found that even though there was not change in passing rates on the state standardized tests, there were positive implications for social change. She therefore recommended that the schools that implement block scheduling provide teachers with appropriate professional development and training on proper instructional strategies to improve student academic achievement. She stated that an emphasis be placed on the training of teachers to develop a variety of teaching strategies to properly take advantage of the time provided by block schedules.

Merchant & Paulson (2001) concluded that further staff development was needed in their study. They also pointed out the need for more student support from faculty members. Their study indicated the need for schools to consider the different learning needs of their students and that professional development opportunities should be provided to teachers offering strategies to maximize the time provided through a block schedule.

Ford (2002) stated that if teachers are to bring about much needed change, they must change their methodology of teaching. Teachers are participating in staff development programs that are organized and provide ongoing improvement initiatives that reflect student achievement. Teachers must actively engage their students in the learning process. Ford further stated that a variety of instruction is needed in order to meet the various needs of students.

Porter (2002) acknowledged that once the decision for block scheduling was made, it became clear that the delivering the curriculum in the same ways would no longer be effective. She affirmed that changes had to be made in the areas of practices, materials, and topics. These changes had to be initiated to address the differing ability levels of the students that would be in the same classes. Assessment of students had to change with the curriculum. This had to be accomplished by working together as a faculty and finding the literature and training required to successfully accomplish the task of switching to a block schedule.

Porter also stated that various types of professional development could be attended. She recommended site visits. These were where teachers and administrators compiled a list of schools on the block schedule. The teachers and administrator then



visited those facilities. Guest teachers were suggested as a way to answer questions and get ideas for teaching.

Conley (1994) wrote,

“Even though changing the schedule of instructional time is particularly popular in secondary schools, the schedule is not necessarily accompanied by the changes in the classroom teaching that must occur for any new schedule to effect student learning.” (p. 14). There seems to be an assumption that making a structural change will cause a change in content and methods of teaching. Change may, in fact, occur in some classrooms, but there is no guarantee that “alterations in the structure and organization of the school automatically translates into changed behavior within classrooms by individual teachers.” (p. 14).

Corley (2001) stated the lack of professional development, administrative support, and communication were some of the causes for the teachers not to buy into the block schedule idea. The teachers were “digging in their heels” and failed to support this initiative in the rural school in Ohio he wrote about.

### **At-Risk Students**

Students that are considered to be at a higher risk for success are students with an Individualized Educational Plan (IEP), students that are typically lower performing, and student who have a language barrier. According to the U.S. Census Bureau (2003, 2005) data, English language learners are up to 70% more likely to drop out of high school.

When looking at curriculum and instruction for regular education students, special education students must be considered. Students who require special accommodations and or modifications are affected by change of any kind (Vermillion, 1998). Some special

education students have problems with retention which could be a problem for blocked classes that are one semester in length. Standardized tests are not given until close to the end of the school year, and if a class ends in December some students could have problems with recalling the information.

Vermillion (1998) also recognized teacher perceptions of the block schedule on special education students. The results showed that students had more time to finish homework and study for tests. They also had more time to complete written assignments and process information. Teachers in this study also stated there was more time for individualized attention from special education teachers and regular education teachers.

Faulk (2009) looked at the scores of special education students before and after the implementation of block scheduling, and found there was no difference in the scores. Tenney (1998) used a series of surveys sent to the teachers that helped him identify the difference between the impact of block scheduling on regular students, students identified with Attention Deficit Hyperactivity Disorder, and students identified with Emotional Behavioral Disorders. The results indicated while there was an increase in achievement for all students, the regular education students were significantly higher than the at-risk students.

In a study completed by Childers & Ireland (2005) they found students at-risk are helped on a block schedule when they participated in only two major academic courses each semester. This allowed them to focus on those courses knowing the next semester they were able to focus on something else.

Hancock (2010) found some students understood the academic language enough to analyze text while other students did not know the language enough to participate in

personal conversation. Students were taught the same, under their current model of teaching, no matter what their level of understanding.

Hancock (2010) indicated that students who participated in the traditional model of teaching made no gains over a six week time period. The experimental group participated in a Five Block Schedule and made significant gains with the tiered instruction. Hancock describes the Five Block Schedule as the process of extending time for English language arts to form five blocks: word work, fluency, writing, comprehension strategies, and small group differentiation. Some of the gains were in the areas of identifying letters and decoding words, writing, and following directions in English.

Vermillion (1998) noted block scheduling is not a universal solution to problems within the educational system; however implementation can occur smoothly for the students if planned carefully.

## **Conclusion**

During the review of literature, it became apparent data was inconclusive. The research provided varied results on the efficacy of block scheduling. Some studies have shown there are academic benefits to block scheduling while other studies indicated there were no benefits.

Most of the research indicated a need for extensive and sometimes costly professional development. Some of the studies noted block scheduling failed due to the lack of support, communication, and training. Smith (2010) observed most teachers and administrators stated they did not receive an adequate amount of training to utilize



teaching time provided by the block schedule. The need for teachers to be taught how to utilize the extended time in this type of scheduling is imperative.

Throughout the literature it was indicated that some teachers were using activities and varied approaches to teaching while other teachers were lecturing and note taking for the entire 90 minutes. The research also recorded there were varied results based on the type of block schedule implemented. It is obvious further research on the effectiveness of block scheduling is needed.

## **Chapter III**

### **Methodology**

The purpose of this study was to determine the effect of blocked classes on student achievement based on the use of archival and descriptive data from standardized test scores. The Tennessee Comprehensive Assessment Program test was used to study the relationship between students receiving instruction through a blocked reading and language class and students receiving instruction in a traditional class setting. Archival data were utilized from the 2009-2010 and 2010-2011 school years. This study was presented to Austin Peay State University Institutional Review Board (IRB) and subjected to a similar review in the school district.

### **Research Design**

This quantitative study used archival data, and consisted of a descriptive research design, where data was collected, organized, and summarized to indicate the variability within student achievement scores.

### **Participants**

The participants for the study were chosen by a computer program that decided where the students would be placed for reading and language arts classes. There were two blocked language arts/ reading courses in the participating school with forty-one students in those two classes. The same teachers taught seventy-one other students on a traditional schedule.

In this study, 114 middle school students were taught in 8<sup>th</sup> grade Reading and Language Arts. In the 7<sup>th</sup> grade all were taught in traditional schedule formats by their regular 7<sup>th</sup> grade teachers. In 8<sup>th</sup> grade, forty-one of those students were taught in blocked

schedules. Nineteen of these 8<sup>th</sup> graders were taught by teacher one and twenty-two of these 8<sup>th</sup> graders were taught by teacher two.

Seventy-three students were taught by a traditional schedule, as in 7<sup>th</sup> grade. Forty-seven of these 8<sup>th</sup> graders were taught by teacher one and twenty-six by teacher 2.

### **Instrument**

State required testing at the 3-8 grade levels has a long history in Tennessee. There have been different names for the standardized tests in Tennessee throughout the years and is currently called the Tennessee Comprehensive Assessment Program (TCAP) test. It is mandated for the academic subjects Mathematics, Science, Social Studies, and Reading/Language Arts. The test is administered in the spring of every school year and consists of multiple choice items that measure knowledge and application skills for the academic subjects. The results of these tests are provided to teachers and administrators to determine the best instructional practices to address the needs of the students.

The TCAP test is a criterion referenced test because it measures whether a student has mastered the standards set forth by the state. Teachers are giving specific instructions each year on the appropriate testing procedures. Teachers can only read the script written in the testing manual.

The information from TCAP scores provide data for the Tennessee Value-Added Assessment System (TVAAS). TVAAS is a statistical analysis system that Tennessee used to determine a student's academic growth over a period of time.

### **Data Collection Procedures**

1. Permission was sought from the Institutional Review Board and the Clarksville-Montgomery County Board of Education.



2. The researcher looked at research on the subject in the literature.
3. Once approval was granted, data were gathered and placed into an Excel spreadsheet
4. A series of t-tests was conducted to determine significance of results.
5. These results were then analyzed and interpreted.
6. Research results were presented in this field study report.

### **Null Hypotheses**

This study tested the following null hypotheses:

Hypothesis 1: There will not be a significant difference in TCAP scores for students in the blocked classes from students in the traditional classes taught by the same teacher in grade 8.

Hypothesis 2: There will not be a significant difference in TCAP average gain/loss (NCE) scores from students in traditional classes in grade 7 to blocked classes in grade 8.

Hypothesis 3: There will not be a significant difference in TCAP average gain/loss (NCE) scores from students in traditional classes in grade 7 to traditional classes in grade 8.

Hypothesis 4: There will not be a significant difference in TCAP average ELA gain/loss (NCE) scores in traditional classes in grade 7 to blocked classes in grade 8 from traditional classes in grade 7 to traditional classes in grade 8.

Hypothesis 5: There will not be a significant difference in standardized test scores for the minority students from the majority students who participated in blocked classes and traditional classes in grade 8.

Hypothesis 6: There will not be a significant difference in standardized test scores for the male students from the female students who participated in blocked classes and traditional classes in grade 8.

A series of t-tests were run on this archival data to determine the relationship between blocked classes and traditional classes. The t-tests examined the relationship between block and traditional class effectiveness, female and male students in block and traditional schedules, and minority/majority students in block and traditional classes.

## Chapter Four: Findings

### Purpose of the Study

The purpose of the ex post facto study was to determine if there were statistically significant differences among standardized test scores for students based on the type of teaching schedule for English Language Arts (ELA) classes. Additionally this study was conducted to determine if students had a greater level of growth in traditional or blocked classes. Finally, this study was conducted to examine the impact of the type of schedule on males and females and minority and majority students.

The data for this study was collected through the use of TCAP scores and student records. The school selected for the study utilized an electronic database to gather the demographic information. The data was then put into an Excel spreadsheet and analyses were performed on the information.

### Results of Hypothesis 1

Table 1: TCAP Means for Traditional v. Blocked Classes for Teacher 1 in ELA in Grade 8

Teacher 1	Number of students	Reading/Language Arts TCAP Mean
Traditional classes	47	53.79
Blocked class	19	59.47
P value/ Gain	.13	56.63

Table 2: TCAP Means for Traditional v. Blocked Classes for Teacher 2 in ELA in Grade 8

Teacher 2	Number of students	Reading/ Language Arts TCAP Mean
Traditional classes	26	67.38
Blocked class	22	51.73
P value/ Gain	.00012	59.56



When TCAP mean data was analyzed, means for blocked classes by teacher were 59.47 from teacher one and 51.73 from teacher two. The mean for traditional schedule from teacher one was 53.79 and was 67.38 from teacher two. The p value for the classes taught by teacher one was .13, so there was not a statistically significant difference. The p value for the classes taught by teacher two was .00012, so there was a statistically significant difference in these classes taught by this teacher, with the traditional scores much higher. Based on this information, the null hypothesis was rejected.

Table 3: Combined TCAP Mean Scores for Traditional v. Blocked Classes in ELA in Grade 8

Combined	Number of students	Mean NCE scores
Traditional classes	73	58.63
Blocked classes	41	55.32
Total/p value	114	.24

The data was combined from both teachers to determine the statistical difference. In the data, traditional classes had a higher NCE score than blocked classes. The p value for this set of data is 0.24, so there is not a statistically significant difference based on the  $p < .05$  level of significance. While blocked classes got better results from one teacher and traditional classes significantly higher results from the other, when both teachers' scores were combined, traditional scores were higher, but not by much and not significantly so, no more than by chance.

## Results for Hypothesis 2

Table 4: TCAP Gain Scores in Traditional Classes from Grade 7 to Blocked Classes in Grade 8

	Number of students	Traditional 7 <sup>th</sup> NCE scores	Blocked 8 <sup>th</sup> grade NCE scores	Gain	P value
Teacher 1	19	50.63	59.47	8.84	.074
Teacher 2	22	48.59	51.73	3.14	.40
Total	41	49.54	55.32	5.78	.06

Forty-one students in seventh grade were taught Reading and Language Arts by traditional classes and when in grade 8, they were taught in blocked classes. The mean NCE scores for grade 7 was 49.54, and the mean for grade 8 was 55.32. The gain score was 5.78, which has a p value of 0.06, which is approaching significantly different.

Therefore, the null hypothesis is retained. Teacher one's students had a gain of 8.84 in the blocked schedule, and Teacher two's students in the blocked class had a gain of 3.14.

These students experience growth while utilizing this type of schedule.

## Results for Hypothesis 3

Table 5: TCAP Gain Scores in Traditional Classes from Grade 7 to Traditional Classes in Grade 8

	Number of Students	Traditional 7 <sup>th</sup> grade NCE scores	Traditional 8 <sup>th</sup> grade NCE scores	Gain	P value
Teacher 1	47	45.87	53.79	7.91	.0097
Teacher 2	26	60.04	67.38	7.35	.07
Total	73	50.92	58.63	7.71	.004

Seventy-three students in seventh grade were taught Reading and Language Arts by using a traditional schedule, and when in eighth grade, they were also taught using the traditional schedule. The mean NCE score in seventh grade was 50.92 and was 58.63 in

eighth grade. The gain was 7.71 points and the p value for the total was .004. This indicates that there was a statistically significant difference in scores between seventh grade and eighth grade for these students based on the .05 level of significance. Both teachers' scores improved quite nicely from grade 7 to grade 8, and when combined this was significant growth, but this could not be attributed to the schedules used. This data indicates that the null hypothesis is rejected.

### Results for Hypothesis 4

Table 6: Comparing Traditional Schedule to Blocked Schedule

	Number of students	7 <sup>th</sup> grade NCE mean	8 <sup>th</sup> grade NCE mean	Gain	P value
Traditional to traditional	73	50.92	58.63	7.71	.004
Traditional to block	41	49.54	55.32	5.78	.06

Growth scores from the seventh grade to the eighth grade from NCE scores were computed. In the blocked classes, teacher 1's students grew by 8.84 points (Table 4), and teacher 2's students grew by 3.14 points (Table 4). The total gain for traditional to blocked students was 5.78 points, with a p value of .06. This indicates that scores received during this type of schedule are approaching the .05 significance level.

In the traditional classes, teacher 1's students grew by 7.71 points (Table 5), and teacher 2's students grew by 7.35 points (Table 5). The total gain for traditional to traditional students was 7.71 points, with a p value of .004. This indicates that there is a statistically significant difference at the .05 level between the scores received in 7<sup>th</sup> grade and the scores received in 8<sup>th</sup> grade using the traditional schedule.



Students made substantial gains during their eighth grade year in both teachers' classrooms using both types of schedules, but only the traditional to traditional children made gain scores that were significant across these two grades. Traditional to block children did made gains but not enough to be considered more than by chance...less than the .05 level of significance.

### Results for Hypothesis 5

Table 7: Minority v. Majority Scores in Blocked and Traditional Classes

	Number of students	Traditional 8 <sup>th</sup> grade NCE means	Blocked 8 <sup>th</sup> grade NCE means	P value
Minority	72	58.22	53.77	.76
Majority	42	59.33	58.0	.36
Total/p value	114	.20	.78	

The data was analyzed by minority and majority students. The NCE means for minority students in traditional 8<sup>th</sup> grade Language Arts and Reading classes was 58.22 and for blocked classes was 53.77. The p value for these scores was .76, which is not a statistically significant difference.

Majority students averaged 59.33 in traditional classes and 58.0 in blocked, with a p value of .36. There is not a statistically significant difference in these scores.

There is also no significant difference in whether minority or majority students were taught in blocked or traditional settings, with a p value of .78 and .20 respectively. Therefore, the null hypothesis is retained.

## Results for Hypothesis 6

Table 8: Female v. Male Scores in Blocked and Traditional Classes

	Number of students	Grade 8 Traditional NCE means	Number of students	Grade 8 Blocked NCE means	P value
Male	42	56.5	13	54.23	.59
Female	31	61.52	28	55.82	.16
P value	73	.15	41	.74	

The data was analyzed by gender also. The means of NCE scores for males on eighth grade TCAP scores were 56.5 in traditional classes and 54.23 in blocked classes. This yielded a p value of .59, which is not statistically significant at the .05 level.

Females had means of 61.57 in traditional classes and 55.82 in blocked classes, with a p value of .16, which is also not significant.

When looking at just traditional classes, there was a p value of .15, not significant, while blocked classes for males and females showed no difference either with a p value of 0.74. This illustrates that the null hypothesis is retained.

## Chapter V

### Summary

This study examined the relationship between the type of student schedules and student scores on standardized test using the information gathered from the State of Tennessee TCAP scores. The study focused on one team of eighth grade students that had been randomly placed into either a traditional setting for Reading and Language Arts or a blocked setting for Reading and Language Arts.

There were 114 sets of student data files in this study. All of the students had participated in their seventh grade Reading and Language Arts in the traditional setting. Of the 114 students, seventy-three attended the blocked classes in eighth grade, and forty-one of them attended traditional classes. The two teachers these students had taught both traditional and blocked classes in grade eight.

Demographics of the students indicated there were 59 female students (52%) and 55 male students (48%). The students were examined for progress according to their minority and majority status. In this study, seventy-two (63%) of the students were minority and forty-two (37%) were majority. The results indicated that all students' scores and growth were similar. The type of schedule neither had a significantly different impact on minority students or majority students, nor did it have a significantly different impact on male or female students.

This research showed that the efficacy of blocked classes was inconsistent at best. This research demonstrates that this type of scheduling does not have a significant impact on student standardized test scores. However traditionally scheduled students in grade 8 made significantly better gains from their traditional classes in grade 7 in TCAP gain



scores. While students in both the traditional and blocked classes showed substantial improvement from their seventh grade scores under the tutelage of these teachers, there was a significant gain from seventh grade to eighth grade for students only in the traditional classes.

Students in the blocked classes experienced near similar growth, but not quite at a statistically significant level. The teaching techniques and strategies used by teacher one had a greater influence on students in the blocked class, whereas the techniques and strategies used by teacher two had a greater influence on the students in the traditional setting.

Normal Curve Equivalencies (NCEs) put all students on a bell curve with a score of 50 being the average (mean, median and mode). Students in this study scored extremely well when compared to the average students in grade 8. With 50 being what would be expected from average students at the national level, students in this study had NCEs of 58.63 for traditional and 55.32 for the blocked group for grade 8. Differences in these means were not statistically significant when looking at students who were taught in blocked versus traditional formats. The type of schedule did not influence the students' performance or academic achievement in their eighth grade English-Language Arts classes.

The students in the traditional classes had a statistically significant difference in scores in 8<sup>th</sup> grade compared to their scores in 7<sup>th</sup> grade. The content and standards were the same in both the traditional and blocked settings, but students showed more growth in the traditional setting.

There are several conclusions that can be drawn from this study.

Possibly these results were colored because the students have engaged in the traditional style classes during the entirety of their middle school years. Students are used to forty-five minute class periods with a four minute break between them.

These students might have needed the break and a chance to relax and regroup for the next class. The break also gave the students the opportunity to socialize with some of their friends and use the restroom if needed.

With the teachers teaching one subject at a time, the students and teachers know which standards and subjects are receiving the focus. There is one set of standards in Tennessee for both Reading and Language Arts to share. This school broke them into Reading standards and Language standards. These teachers possibly tried to combine some of the standards for the blocked students and not put as much emphasis on them during their blocked classes as they did in their traditional classes. The students in this type of setting also were able to focus on one class at a time.

Finally, blocked or traditional utilization should be based on the needs of the students, faculty, and time guidelines of each specific school. The school in this study is able to use both types of scheduling effectively.

### Recommendations

The recommendations generated from this study are as follows:

1. Scheduling should be chosen based on the unique needs of individual schools.
2. There should be adequate and appropriate training provided to the teachers who are instructing in the blocked as well as the traditional settings.

3. There is a need for further research in the area of blocked versus traditional instruction.
4. Future research in this area could focus on the impact of blocked classes on students with disabilities, military versus civilian dependents, disciplinary issues, and more specific ethnicities.



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## Appendix I

## Data Set

Column1	Column3	Column5	Min/Maj	Column9	Column13	Column18	Column19
Student	B/T	M/F	Minor/Major	NCE 7th	NCE 8th	NCE Growth	Teacher
1	1	1	1	77	93	16	1
2	1	2	1	54	66	12	1
3	1	2	1	13	39	26	1
4	1	2	2	45	46	1	1
6	1	1	2	40	46	6	1
7	1	1	1	77	81	4	1
8	1	1	1	68	74	6	1
10	1	1	2	56	63	7	1
11	1	1	1	51	62	11	1
12	1	2	2	47	52	5	1
13	1	1	2	45	62	17	1
14	1	1	1	54	41	-13	1
15	1	1	2	46	71	25	1
16	1	2	1	49	69	20	1
17	1	1	2	62	54	-8	1
19	1	1	2	53	64	11	1
20	1	1	2	31	36	5	1
21	1	1	2	43	52	9	1
22	1	1	1	51	59	8	1
23	2	2	1	33	52	19	1
24	2	1	1	51	58	7	1
25	2	2	1	53	58	5	1
26	2	1	2	51	54	3	1
27	2	2	2	36	43	7	1
28	2	2	2	24	36	12	1
29	2	1	2	80	69	-11	1
30	2	2	2	53	64	11	1
31	2	2	2	53	54	1	1
32	2	1	1	64	71	7	1
33	2	2	2	49	42	-7	1
34	2	1	1	56	41	-15	1
35	2	2	1	43	58	15	1
36	2	2	2	40	39	-1	1
37	2	1	1	24	33	9	1

38	2	2	1	43	62	19	1
39	2	1	1	58	56	-2	1
40	2	1	2	29	62	33	1
41	2	2	2	42	43	1	1
44	2	2	2	45	52	7	1
45	2	2	2	73	62	-11	1
46	2	2	2	30	35	5	1
47	2	1	2	56	69	13	1
48	2	2	2	82	85	3	1
49	2	2	2	30	66	36	1
50	2	1	2	49	46	-3	1
51	2	2	1	33	58	25	1
52	2	2	1	23	41	18	1
53	2	2	2	73	69	-4	1
54	2	1	2	30	37	7	1
55	2	1	2	43	62	19	1
56	2	2	1	46	54	8	1
57	2	1	2	12	14	2	1
58	2	2	1	30	39	9	1
59	2	2	1	56	52	-4	1
60	2	2	1	37	50	13	1
61	2	2	2	53	56	3	1
62	2	2	1	31	42	11	1
63	2	2	2	54	58	4	1
64	2	2	1	68	74	6	1
65	2	1	2	46	50	4	1
66	2	1	2	47	58	11	1
67	2	1	2	23	50	27	1
68	2	1	1	68	64	-4	1
69	2	2	2	36	64	28	1
70	2	1	2	53	74	21	1
71	2	2	2	47	52	5	1
72	1	1	2	56	59	3	2
73	1	2	2	34	46	12	2
74	1	2	2	80	74	-6	2
75	1	1	2	51	46	-5	2
76	1	2	2	46	59	13	2
77	1	1	2	51	66	15	2
78	1	1	1	42	58	16	2
79	1	2	2	60	77	17	2
80	1	1	1	45	31	-14	2



81	1	1	2	29	54	25	2
83	1	2	1	49	54	5	2
84	1	1	1	60	50	-10	2
85	1	1	1	45	37	-8	2
86	1	1	2	36	43	7	2
87	1	2	2	37	32	-5	2
89	1	1	2	49	54	5	2
90	1	1	2	68	66	-2	2
91	1	1	2	58	37	-21	2
93	1	2	2	46	45	-1	2
94	1	1	1	36	56	20	2
95	1	2	2	49	46	-3	2
96	1	1	2	42	48	6	2
97	2	2	2	68	77	9	2
98	2	1	2	54	71	17	2
99	2	1	2	54	66	12	2
100	2	1	2	53	59	6	2
101	2	1	2	60	85	25	2
102	2	2	2	77	69	-8	2
103	2	2	1	73	66	-7	2
104	2	1	1	68	71	3	2
105	2	1	2	58	85	27	2
106	2	1	2	53	71	18	2
107	2	1	1	54	64	10	2
108	2	2	2	60	58	-2	2
109	2	1	1	62	81	19	2
110	2	2	2	53	54	1	2
111	2	2	2	29	46	17	2
112	2	1	2	60	62	2	2
113	2	2	1	72	62	-10	2
114	2	2	1	62	56	-6	2
115	2	1	1	82	93	11	2
116	2	2	2	62	81	19	2
117	2	2	1	87	77	-10	2
118	2	1	1	58	69	11	2
119	2	2	2	18	29	11	2
120	2	2	2	42	74	32	2
121	2	1	2	60	62	2	2
122	2	2	2	82	64	-18	2

B/T= Block = 1/Traditional = 2; M/F= Male = 2/Female = 1; Majority = 1 Minority =2

# Research Proposal

Leigh Ann Parr

Sent: Tuesday, July 05, 2011 4:55 PM

To: Kimberly Rorie

Cc: Bryan Feldman

Ms. Rorie,

Per Dr. Armstrong - your request to conduct research on blocked and traditional classes in your middle school has been approved by the Research Committee. You may now contact your principal for permission.

*Leigh Ann Parr*

*Administrative Assistant-Instruction*

*Clarksville-Montgomery County School System*

*621 Gracey Avenue*

*Clarksville, TN 37040*

*Phone: (931) 920-7826*

*[leighann.parr@cmcss.net](mailto:leighann.parr@cmcss.net)*

Kimberly Rorie  
2654 Highway 79  
Indian Mound TN 37079

RE: Your application regarding study number 11-053: The Effects of Block Scheduling on Standardized Test Scores

Dear Ms. Rorie ,


Thank you for your recent submission. We appreciate your cooperation with the human research review process. I have reviewed your request for expedited approval of the new study listed above. This type of study qualifies for exempt status under FDA and NIH (Office for Protection from Research Risks) regulations.

This status is subject to APSU Policies and Procedures governing human subject research. The full IRB reserves the right to withdraw the exempt status if issues are raised during the conduct of your study.

Please note that any changes to the study must be promptly reported and approved. Some changes may be approved by expedited review; others require full board review. If you have any questions or require further information, you can contact me by phone (931-221-7467) or email ([davenportd@apsu.edu](mailto:davenportd@apsu.edu)).

Again, thank you for your cooperation with the APSU IRB and the human research review process. Best wishes for a successful study!

Sincerely,



Doris Davenport, Chair  
Austin Peay Institutional Review Board