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Introduction

According to MacArthur (2000), "God Himself has given the responsibility for raising children to parents—not to schoolteachers, peers, child-care workers, or other people outside the family" (p. 19). Scripture instructs parents that the two single most important things they are to do in life are to love God with their whole heart and to teach their children to do likewise (Schultz, 2002). There are many parents who choose to homeschool their children for the primary reason that they desire to instill in their children this same biblical worldview. Oftentimes, these parents are successful; however, as the courses become increasingly more difficult, partnering with an expert in the field who shares the same biblical worldview is a wise option. When schools took God out of the curriculum, they not only denied the existence of absolute truth, but also of absolutes in morality. According to Reese, (as cited in Murphy, 2006), "Most educators in the 19th century assumed that character development, religiosity, and intellectual achievement were inseparable. Knowledge was always embedded in a moral framework" (pp. 290-291).

Started in 1992, the UMS® program offers a unique choice to parents who desire to have an integral part in their child's schooling. It was founded on two educational theories tested by the GPA Project: the significance of parental involvement and the role of character development in educational success as they prepare for college (History, **http://www.naums.net**). This model offers more flexibility to parents and allows them more time with their children to impart their faith and values (Turner, 2001). In a UMS®, high school students follow a university-style schedule, attending classes either Monday-Wednesday-Friday or Tuesday-Thursday. Students enroll in rigorous academic courses on a semester basis, taking only the courses they desire. They develop a strong work ethic that will serve them well in college. Proponents of UMS® view it as a balanced approach; teachers and parents are true partners in the educational process.

Research studies have shown the importance that family involvement contributes to the success of the student. According to Lloyd-Smith and Baron (2010), a positive correlation exists between parental involvement on student grades, attendance, attitude, and motivation. According to Conley (2008), "Students vary in the degree to which high school and family life prepare them for college, and that preparation has a dramatic impact on their transition to college and subsequent success" (p. 3). Unfortunately, the current, traditional approach to education has almost completely separated schools from their communities. Effective school/home partnerships must be characterized by mutual trust

and respect among all parties (Keyes, 2002). The parent-cooperative movement advocates teachers and parents working "side by side empowering parents and giving the parents teaching roles" (p. 182). This view of the roles of both parent and teacher would be in alignment with advocates of the UMS® model.

Purpose of the Study

Most reform models are utilized within the public school sector; however, they are also beginning to infiltrate the private Christian school population. According to the 2011 Cardus Education Survey, one reason parents choose to send their children to a private, Christian school is their desire to educate their children from a biblical perspective. Of great concern is the spiritual formation and character development of their children (Pennings, Seel, Van Pelt, Sikkink, & Wiens, 2011). Unfortunately, there is a "growing tension between academic rigor and discipleship in Protestant Christian schools" (p. 11). The Cardus Education Survey (2011) found that in many circumstances, Protestant schools emphasized spiritual development, but fell "short in the academic development of their students" (p. 13). Their graduates mirrored public school graduates in the number of students who attended college and the number of years of college attended. The graduates also tended to attend less competitive colleges than Catholic school graduates. Where Catholic school administrators cited college attendance as a high priority for its graduates, Protestant school administrators viewed family as their highest priority. It would seem that Protestant Christian parents must choose between a school that provides a rigorous academic curriculum and a school that nurtures their child's Christian faith. Parents should not be faced with such a decision. In a recent Association of Christian Schools International (ACSI) Administrator and Board Conference, Simon Jeynes (2012), from Independent School Management (ISM), addressed the issue of whether Christian schools can meet their students' needs for academic development, spiritual formation, and cultural engagement. He asked if academic excellence might not be a spiritual virtue. In other words, he questioned whether academic excellence is also an act of worship, and thus a spiritual activity, not just an intellectual one. This idea might lead one to believe that all schools, and particularly those of a religious nature, must provide a sound academic program that prepares students for post-secondary success, as academic achievement is not in conflict with spiritual formation.

UMS® schools have been in operation for almost twenty years; however, until the completion of a recent dissertation that studied the role of parental involvement in the UMS® model, there has been no published research to back NAUMS' claims that UMS® high schools prepare students academically for college. The purpose of this correlational study was to determine if there is a statistically significant relationship between the type of school a high school senior attends (University Model School® or traditional, comprehensive Christian) and academic college readiness, when controlling for prior academic achievement and gender. For purposes of this study, traditional, comprehensive Christian schools are defined as private, Christian day schools that offer a curriculum similar to the public schools where students study content organized by subject matter and earn Carnegie units in order to graduate; they follow a 180-day school year and employ teachers who provide instruction within the traditional classroom.

Background

In President Obama's State of the Union address in January, 2010, he stated, "In this economy, a high school diploma no longer guarantees a good job." Findings of the forty-second annual Phi Delta Kappa/Gallup Poll that year backed up his statement, when 75% of Americans agreed that a college education was necessary to be successful in today's changing world. In addition, 91% stated that all high school students should graduate being prepared for post-secondary education and career (Bushaw & Lopez, 2010).

Most high schools offer a college-preparatory program that claims to prepare their graduates for higher education. The desire to produce college-ready graduates is warranted. With the increased globalization that has taken place over the last two decades, the National Commission on the High School Senior Year stated in 2001 that a high school education is no longer sufficient for students to meet today's demands. At least two years of training after high school are necessary in some sort of postsecondary environment.

Even with high schools placing an emphasis upon a college preparatory program, statistics have shown

that "only about 35 percent of students who entered four-year colleges…in 1998 had earned their degree four years later, and only 56 percent had graduated six years later (Knapp, Kelly-Reid, & Whitmore, as cited in Conley, 2007, pp. 1-2). Conley, Aspengren, Stout, and Veach (2006) found, "One of the major reasons that students falter in college is the gap between their high school experiences and college expectations" (as cited in Conley, 2007, p. 2). If high schools are to claim that they are preparing their graduates for success in college, then this gap must be bridged. The challenge for high school administrators is to determine what constitutes college readiness and to effectively implement strategies that enable students to make the transition to college.

Theoretical Framework

Educators do not agree on the best way to prepare students for college. Most attempts to hold schools accountable for increased student achievement fall under the theoretical framework of Academic Achievement Discourse (AAD). AAD is a term coined by Thomas Armstrong (2006) that refers to the current educational movement spurred on by Public Law 107-110, also known as the *No Child Left Behind Act of 2001*, that includes high-stakes testing and adequate yearly progress. AAD did not begin, however, in the twentieth century. In fact, one of the most significant events in favor of AAD was the Committee of Ten's report that was written in 1893. The committee's goal was to standardize high school curriculum so that all students who entered college would have received the same college-preparatory curriculum.

Another prevalent framework upon which high school reforms are built is Human Development Discourse (HDD). HDD promotes educating the whole child, including his or her "cognitive, emotional, social, ethical, creative, and spiritual" aspects in the educational equation (Armstrong, 2006, p. 39). Educators who promote humanism or creativity would fall into this camp. A key component of HDD is that education should be individualized to the needs and interests of the students, thus developing within each student a passion for lifelong learning.

History of High School Curriculum Reform

In addition to understanding the theoretical underpinnings of educational reform, it is important to place current reform options within the context of high school curriculum reform. For over 200 years, the debate over what constitutes an appropriate high school curriculum has focused on three primary issues: "What students should learn, whether all students should learn the same thing, and who should make decisions about such matters" (Lee & Ready, 2009, p. 137). By 1890, the public high school had become the dominant model for secondary education, and an educational system based upon amount of time spent per academic year began to take root. In 1893, the Committee on Secondary School Studies recommended that even though not all students were college-bound, all should take the same college-preparatory classes (Bohan, 2003). Twenty-five years later, *Cardinal Principles of Secondary Education*recommended that students take courses based upon their future plans, so students were placed in tracks (vocational, general, and academic).

In 1958 the US Congress passed the *National Defense Education Act* that allocated millions of dollars toward improving math and science education. Once federal funding was introduced into education, government mandates to assess the improvements followed. As higher standards in education took center stage in the 1960s, high schools began to offer more course options based upon student interests and future plans. Formal tracking ceased to operate; however, students still received differentiated curriculum based upon their choices.

In 1969 the *National Assessment of Educational Progress*, or the *Nation's Report Card*, was established with help from the Carnegie Foundation. By 1970 the term accountability was used in education in reference to teaching (Armstrong, 2006). In 1983 *A Nation at Risk* took center stage by establishing nationwide academic standards and a common core curriculum. It declared that, Regardless of race or class or economic status, are entitled to a fair chance and to the tools for developing their individual powers of mind and spirit to the utmost" (National Commission on Excellence in Education, 1983, p. 9). States assumed that by increasing the number of credits students needed to graduate, they were basically increasing the rigor of the curriculum. This phase of curriculum reform "assumed that contemporary approaches to teaching and learning were adequate" (Lee & Ready, 2009, p. 141).

Whereas the first phase of reform focused on increasing graduation requirements, it left the differentiated curriculum intact. The result was that the gap continued to widen based upon socio-economic background (Lee & Ready, 2009). During this time, research conducted almost exclusively at public comprehensive high schools found that students learned more if they attended schools where they were required to take college-prep courses. This belief led to the second phase of reform that insisted that all students take "a common core of studies" (Lee & Ready, 2009, p. 142).

"This process of 'raising the bar' began in earnest in the early 1990s, when national organizations released model content standards" (Conley, 2003, p. 9). States soon followed with their own standards and assessments. President Clinton revised *America 2000* and called it *Goals 2000: Educate America Act*, and Congress passed the *Improving America's Schools Act* (Armstrong, 2006). The premise upon which all government-initiated programs have been founded is that with increased effort, formalized assessment, and accountability all students, no matter what their background, have the ability to learn. At the center of this phase of reform were the at-risk and underrepresented population of students; however, current research seems to indicate that these reform attempts may not have been beneficial for these students (Rose, 2011).

The third phase of reform has changed curriculum policy to include "a college-prep curriculum for all students, expanded AP offerings, support courses in ninth grade, and the suspension of remedial courses" (Lee & Ready, 2009, p. 145). Early research findings reveal that although course offerings have changed and under-represented students have been given the opportunity to take more advanced courses, graduation rates have not increased. This could be because what is taught has had a more significant impact on high school reform than how it is taught. Even with mixed results and many questions, "few contemporary policy makers support a return to traditional tracking and the segregating and stratifying effects of the comprehensive high school curriculum" (p. 151). A review of current high school reform models will demonstrate how educators have attempted to provide equal educational opportunities to all students.

Current High School Reform Models

Curriculum reform models have continued to emphasize the need for all students to graduate from high school prepared to pursue post-secondary education. According to Murphy (2006), "there is a nearly universally-accepted belief in play that the nation has gained almost no ground in its efforts to reform our high schools" (p. 285). He believes that now is the time for a dramatic overhaul of secondary education. "College prep for all" has not produced the desired results; therefore, high schools have begun to reform the structure of their organizations.

There has also been consensus among researchers about what constitutes an effective high school. Fleishman and Heppen (2009), Oxley (2008), and Gordon (2003) recommend a combination of a rigorous, yet relevant curriculum available for all students taught by supportive teams of teachers in a personalized learning community and supported by a strong relationship between school and home. These ideas reflect elements from both the AAD and the HDD camps, demonstrating that the two schools of thought are complementary to, not competitive with, each other.

Educators have implemented these ideas through numerous reform models. They include various types of smaller learning communities, secondary-postsecondary learning options (SPLOs), charter schools and education management organizations, blended learning, year-round schooling, and University-Model Schools®. As the context of this study was within two types of Christian schools, these models will be discussed as they interact within the Christian School Movement.

Both comprehensive, traditional Christian schools and UMS® schools would be defined as smaller learning communities, as they usually educate fewer than 900 students (Kuo, 2010). Three principles guide smaller learning communities: "small supportive structures; strong academic rigor; and effective, accountable instruction and leadership" (Smerdon & Cohen, 2009, p. 239). Research has shown that smaller high schools exhibit "lower dropout rates, higher attendance, and higher graduation rates" (p. 392) because there is more personalization for the students. In addition, academic achievement increases, vandalism and behavioral issues decrease, and students state that they feel a sense of belonging (Page, Layzer,

Schimmenti, Bernstein & Horst, 2002). In a study conducted by Armstead, Bessell, Sembiante, and Plaza (2010), smaller learning communities were effective for some students; however, the uneven implementation of the varying communities resulted in mixed results.

One type of smaller high school that has been developed to individualize instruction is the specialty or theme-based school. The basic premise of this type of school is that if the teachers and students have chosen to become a part of this community of learners, they have done so because they can pursue their interests in a way that maximizes learning. Teachers and students have something in common, so it tends to be easier for them to form close relationships. In a way, Christian schools would also fit into this category, because of the common worldview of the teachers, parents, and students.

Research conducted using outcome data of the New York State Department of Education's small learning community initiative looks promising, with 93 percent as compared to just 68 percent of high school freshmen being promoted to tenth grade. A ten-year study of small schools by New York University's Institute for Education and Social Policy found that more than 100 NYC small schools created between 1993 and 2003 have shown significantly higher graduation rates, significantly lower dropout rates, and equal cost as compared to traditional high schools (Ancess & Allen, 2006, p. 413).

Blended learning is another reform model that can be implemented within the Christian School community to educate today's youth. The Net Generation is a population of students who are being raised with access to information 24/7. According to Beyers (2009), "they need a redesigned education system and teachers who have been retrained and reoriented" (p. 219). One such option is to mix face-to-face classes with online options. By using technology to connect students to information, teachers become facilitators who enable students to take ownership of their own learning. The online component of blended instruction allows teachers to individualize instruction, to engage students with interactive media they are used to, and to provide students from all socio-economic environments with the same instruction (Olthouse, 2011). Numerous studies have shown promising results. In one study that compared blended learning with online learning, achievement test scores of those in the blended learning group were statistically higher those in the online group (Al-Hebaishi, 2012). In another study of the Cisco Networking Academy, Dennis, Duffy, and Dakir (2010) concluded that "the blend of centralized curriculum and testing, combined with local instruction and a strong instructor support program, enables the best of both worlds" (p. 141). Both traditional, comprehensive Christian schools and UMS® schools can use blended learning options. Because of its format, the UMS® model would particularly lend itself to the addition of an online component to supplement what the students learn in the brick and mortar setting.

Secondary-Postsecondary Learning Options (SPLOs) are another effective means of preparing students for college. SPLOs allow students to participate in college-level courses while still in high school. Dual enrollment is one type of SPLO. Many dual enrollment programs are simply an agreement between a high school and a college, allowing high school students to take classes concurrently at both locations. Some high schools offer the courses, while others follow the Early or Middle College High School Programs where the high school is located on the college campus. Traditionally, dual enrollment programs have been seen as opportunities for the academically talented students. In recent years, they have expanded to include students at risk or who traditionally would not consider college. These students may benefit the most because their confidence to do college work increases. The time and money required to graduate from college is usually shortened (Mokher & McLendon, 2009; Jordan, Cavalluzzo, & Corallo, 2006).

Students enrolled in an Early College High School Initiative (ECHSI) can earn an Associate's degree or two years of college credit while completing high school. Studies of ECHSI schools have shown higher levels of student engagement, improved attendance rates, and increased standardized test scores. The best results occurred when the school was affiliated with and located on the college campus (Kuo, 2010). Middle College High Schools allow students to graduate from high school with some college credit but no degree (Lerner & Brand, 2007; Jordan, et al., 2006). Keys to the success of

these two models are rigor, relationship, and relevance (Ongaga, 2010).

Christian high schools allow students the opportunity to participate in dual enrollment opportunities as location and scheduling allow. UMS® schools particularly encourage dual enrollment, since the schedule readily lends itself to enrollment at local colleges.

Year-round schooling is another model that has been implemented with "nearly 2.2 million students who are enrolled in more than 3,000 K-12 schools" (St. Gerard, 2007, p. 56). One of the primary reasons that educators have moved to a year-round school is because of summer learning loss, the negative effect that a long summer break has on the retention of material and the academic ability of students. Summer learning loss is more prominent with economically disadvantaged students (Huebner, 2010). Research results have been inconclusive on whether there is any advantage to year-round schooling.

In 2009, President Obama advocated for extending the number of days American children spend in school, citing the fact that American children spend over a month less in school than children in South Korea. Some studies have indicated that increased classroom time "allows for a more in-depth study of core subjects as well as broader curriculum offerings" (Mendrala, 2010, p. 211). Mendala concluded, "A variety of factors beyond the mere extension of time may contribute to students' success" (p. 214). Without a significant change in the offered curriculum, simply extending the amount of time that a student spends in school is not sufficient in itself to increase student achievement.

Traditional, comprehensive Christian schools adhere to the 180-day requirement followed by public schools. UMS® schools are able to meet the 180-day requirement by counting both their central classroom days, when the students attend the actual school building, and their satellite days, when they work at home under the supervision of their parent. The UMS® model directly opposes a longer school year that was determined as having a positive effect on student achievement in New York City charter schools (Hoxby, Murarka, & Kang, 2009). It also seeks to break the mold begun in 1896 with the American Historical Association's decision that one academic year of study must include five "exercises" (periods) a week (Bohan, 2003). The concept of the Carnegie unit, where high school work is measured by amount of time spent in class is being questioned (Boyer, 1983).

Purpose of the Study

Research studies to determine the effectiveness of the current high school reform models are appearing every day. Christian schools are also reinventing themselves in order to meet the demands of the twenty-first century learner. The University-Model School® is a reform model with limited information and only one recently completed dissertation to research its claims. Schools following the UMS® model have been operating for 18 years and have been accredited since 2003. Data collected from other types of schools promote parent involvement to increase achievement and improve behavior. This study proposed to quantify UMS® beliefs that students who are taught by teachers and parents with the same worldview and moral beliefs can produce high school graduates who are prepared for college and career. Can less time in school actually increase student achievement? Can teacher and parent effectively partner together to instill in students the habits of mind needed for a smooth transition from high school to college? Perhaps following a college-model schedule makes the transition to post-secondary education easier, as proponents of the UMS® model say.

According to Turner (2001), "Schools reflect homes. Research has validated that when homes are strengthened, schools improve. UMS® schools are successfully accessing the most powerful known single influence for reforming education in America: meaningfully involved parents!" (p. 13). Current reform models focus on rigor and relevance. UMS® schools include the additional component of parent involvement that is lacking in the other reform attempts.

At present, the UMS® model is being used solely in the Christian community. The findings of this preliminary study should help to determine if the UMS® is a viable reform model that contributes to academic college readiness of its students. If so, then perhaps the model would be of interest to parents of other faiths who desire to pass along their values to their children while investing in their education.

Methodology

The basic research question to be answered was whether there is a relationship between the type of high school a student attends and academic college readiness, as measured by SAT and ACT scores. Three sequential (hierarchical) multiple regressions were used to control for confounding and to determine the relationship between school type and academic college readiness. The predictor model consisted of three blocks, with the predictor variables being entered in sequence: block one included gender; block two added prior academic achievement; block three added school type.

The study compared archival data from 246 (156 traditional and 90 UMS®) 2009, 2010, and 2011 Christian school graduates from six schools (three of each type) located within a 175-mile radius of Dallas, Texas. To control for external validity, this study used Association of Christian Schools International (ACSI) and National Association of University-Model Schools (NAUMS) schools that were also Southern Association of Colleges and Schools (SACS)-accredited. ACSI is a certifying body for traditional Christian schools, while NAUMS is the certifying body that ensures the quality of the academic program of schools that bear its name (**http://naums.net/**). Schools can also be accredited through Southern Association of Colleges and Schools (SACS). Schools that have met the requirements for NAUMS certification and SACS accreditation have gone through a thorough evaluation process (What is accreditation, n.d.). UMS® schools that are both NAUMS-certified and SACS-accredited would be well-aligned with ACSI/SACS-accredited schools that follow the traditional, comprehensive model of schooling because of the similarities in their accreditation requirements. For this study, to further qualify these schools, additional accreditation with a regional body (SACS) was required.

This study used a criterion sample of graduating seniors from schools that met the accreditation and certification requirements. In order to increase population validity, all graduates from the classes of 2009, 2010, and 2011 who had attended their respective schools for a minimum of three years were eligible for the study. This was done in order to preclude prior education as a major difference within the two groups. The sample was drawn from schools that desired to participate; therefore convenience sampling was used to procure the desired sample.

Data for individual students included gender, ethnicity, graduation year, and academic ability (as measured by Stanford Achievement Test-10 scores taken during their seventh, eighth, or ninth-grade years). There was not enough ethnic diversity to use this as an extraneous variable. The sample consisted of 246 students, (N=246), with 156 from traditional schools and 90 from UMS® schools. Of the 246, 223 took both the SAT Composite (Reading and Math) and the SAT Writing sections: 141 traditional and 82 UMS®. The ACT Composite group consisted of 144 students who took the four main sections: 103 traditional and 41 UMS®.

Prior to conducting data analysis, the researcher ran an independent sample t-test on the mean scores of the Stanford-10 for the largest sample to determine if there was a significant difference between the groups. The difference in means ranged from -25.521 on the SAT-10 Reading Vocabulary scaled score (higher for UMS®) to 1.187 on the SAT-10 Social Science scaled score (higher for traditional). Based upon this statistic, it was determined that a means of analysis was needed that would control for confounding.

A sequential (hierarchical) multiple regression was used to account for the differences in the initial groups so that the results could be attributed to school type. By using the sequential model, the researcher was able to add the control variables in steps, placing gender in the first step, since achievement test scores have previously been determined to be over-predictive or under-predictive for certain students, especially minority and female students (Mattern, Patterson, Shaw, Kobrin, & Barbuti, 2008; Kobrin, Patterson, Shaw, Mattern, & Barbuti, 2008). Block two added prior academic achievement to the equation, and block three added school type to the model for predicting academic college readiness. Results of all three blocks are included in tables one, two, and three, so that the readers can see if gender and prior academic achievement were also statistically significant to the prediction of academic college readiness.

SAT Composite Results

The first research question investigated whether there was a relationship between type of school the

student attended and SAT Composite scores. It included three null hypotheses, one for each step of the regression. The first stated that there is no statistically significant relationship between SAT Composite scores and gender. The null hypothesis was not rejected, as gender was not found to be a contributing factor to the prediction of SAT Composite scores (F (1, 220) = 0.521, p = .471; Sig. F change = .471).

The second null hypothesis stating that there is no statistically significant relationship between SAT Composite scores and prior academic achievement, controlling for gender, was rejected. SAT-10 scores were found to contribute 60% of the variability in SAT Composite scores, when controlling for gender (F(10, 211) = 31.973, p < .001; Sig. F change = .001). This implies that prior academic achievement has a significant relationship with predicting SAT Composite scores.

The third null hypothesis stated that there is no statistically significant relationship between school type and SAT Composite scores, when controlling for gender and prior academic achievement. School type was found to have a statistically significant relationship with SAT Composite scores, although the contribution was 0.8% of the variance (F (11, 210) = 29.932, p < .001; Sig. F change = .037). The prediction model that includes gender, prior academic achievement, and school type in relationship to academic college readiness was also found to be statistically significant.

The correlation coefficient (B = -32.081) shows that UMS® students scored 32.081 points higher (95% confidence intervals from -63.665 to -1.937) than traditional Christian high school students on the SAT Composite, when controlling for gender and prior academic achievement. The uncontrolled difference in means was 68.6 points (UMS® – M = 1132.22, SD = 165.129; traditional – M = 1063.62, SD = 159.527; total – M = 1088.65, SD = 164.584).

The regression coefficient (B) is the actual point difference on the SAT Composite score between UMS® and traditional, comprehensive Christian school students after controlling for initial differences in the two groups. A B score of -32.081 for school type indicates that the UMS® students scored on average 32.081 points higher than the traditional, comprehensive Christian school students on the SAT Composite, with a standard error of 15.65. The 95% confidence intervals (-63.665 to -1.937) show that repeated studies would produce similar scores, with UMS® students scoring higher on the SAT Composite than the traditional students.

The standardized regression coefficient (β) is another way of interpreting the scores, although more controversial than using the unstandardized regression coefficient (King, 1986). The β value of school type was -.096, thus implying no practical significance between the type of school that a student attended and his or her SAT Composite score.

Tables 1, 2, and 3 display R^2 change, the F ratio for R^2 change, the unstandardized regression coefficient (B), the standard error of B, the standardized regression coefficient beta (β), the t value, the significance level for each variable, and the 95% confidence interval for B for each variable after all three blocks of variables had been entered. For readers interested in the results of each subtest and predictor variable, values have been provided in the three tables.

Table 1

Sequential Multiple Regression Model for SAT Composite

	R^2 Change	*F* Ratio/ R^2 Change	*B*	*SE B*	β	*t*	Sig.	95% CI *B* *LL*	95% CI *B* *UL*
Block 1	.002	0.521							
Block 2	.600	35.386*							
Block 3	.008	4.389*							
Gender			11.074	16.223	.034	0.683	.496	-20.907	43.054
SAT-10 Total Reading			0.910	0.452	.156	2.014	.045*	0.019	1.800
SAT-10 Reading Vocabulary			0.259	0.128	.104	2.023	.044*	0.007	0.512
SAT-10 Reading Comprehension			-0.111	0.152	-.036	-0.732	.465	-0.410	0.188
SAT-10 Math			2.123	0.292	.410	7.264	.000*	1.547	2.700
SAT-10 Language Mechanics			0.226	0.256	.050	0.885	.377	-0.278	0.730
SAT-10 Language Expression			0.130	0.270	.030	0.480	.631	-0.403	0.662
SAT-10 Spelling			0.018	0.182	.005	0.099	.921	-0.341	0.377
SAT-10 Science			0.599	0.194	.149	3.091	.002*	0.217	0.982
SAT-10 Social Science			1.048	0.408	.159	2.566	.011*	0.243	1.852
School Type			-32.801	15.656	-.096	-2.095	.037*	-63.665	-1.937

***Note*. SAT-10 scores are scaled scores**

CI = confidence interval; *LL* = lower limit; *UL* = upper limit

***$p < .05$; $\alpha = .05$**

SAT Writing Results

The second research question investigated whether there was a relationship between type of school the student attended and SAT Writing scores. The first null hypothesis stated that there is no statistically significant relationship between SAT Writing scores and gender. The null hypothesis was rejected, as gender was found to be a contributing factor to the prediction of SAT Writing scores (F (1, 220) = 13.016, $p < .001$); Sig. F change < .001), contributing 5.6% ($R^2 = .056$) of the variance. This finding differs from null hypothesis 1a, where gender was not found to have a significant relationship with SAT Composite scores.

The second null hypothesis stating that there is no statistically significant relationship between SAT Writing scores and prior academic achievement, controlling for gender, was rejected. SAT-10 scores were found to contribute 45% (R^2 change = .450) of

the variability in SAT Writing scores, when controlling for gender (F (10, 211) = 21.586, p < .001; Sig. F change = .001). This finding is consistent with the relationship of prior academic achievement to the prediction of SAT Composite scores.

The third null hypothesis stated that there is no statistically significant relationship between school type and SAT Writing scores, when controlling for gender and prior academic achievement. Although the model was found to be statistically significant (F (11, 210) = 19.681; p < .001), accounting for an additional 0.2% (R^2 change = .002), school type was not found to have a statistically significant relationship with SAT Writing scores (Sig. F change = .368). The null hypothesis was rejected because the model to predict academic college readiness was found to be statistically significant. These results do not support the premise that school type has a relationship with SAT Writing scores and the findings of research question one. Although the UMS® students scored 8.822 points higher on the SAT Writing section, (B = -8.822), the 95% confidence intervals of -28.110 to 10.465 cannot affirm that if this study were reproduced the same results would be found. The standardized regression coefficient (β) for school type was -.046, which would mean that there was no practical significance between the type of school that a student attended and his or her SAT Writing score.

Table 2

Sequential Multiple Regression Model for SAT Writing

	R^2 Change	*F* Ratio/ R^2 Change	95% CI *B*						
			B	*SE B*	β	*t*	Sig.	*LL*	UL
Block 1	.056	13.016							
Block 2	.441	26.699*							
Block 3	.003	1.292							
Gender			49.932	10.113	.273	4.938	.000*	29.997	69.868
SAT-10 Total Reading			0.859	0.289	.253	2.977	.003*	0.290	1.428
SAT-10 Reading Vocabulary			0.140	0.080	.100	1.745	.083	-0.018	0.299
SAT-10 Reading Comprehension			-0.022	0.095	-.013	-0.236	.813	-0.210	0.165
SAT-10 Math			0.189	0.191	.065	0.991	.323	-0.187	0.565
SAT-10 Language Mechanics			0.135	0.160	.053	0.843	.400	-0.181	0.451
SAT-10 Language Expression			0.211	0.169	.088	1.249	.213	-0.122	0.543
SAT-10 Spelling			0.157	0.114	.079	1.379	.170	-0.068	0.382
SAT-10 Science			0.118	0.122	.052	0.968	.334	-0.122	0.358
SAT-10 Social Science			0.871	0.258	.233	3.370	.001*	0.361	1.380
School Type			-8.822	9.784	-.046	-0.902	.368	-28.110	10.465

***Note*. SAT-10 scores are scaled scores**

CI = confidence interval; *LL* = lower limit; *UL* = upper limit

***p* < .05; α = .05**

ACT Composite Results

The third research question investigated whether there was a relationship between school type and ACT Composite scores. The first null hypothesis stated that there is no statistically significant relationship between ACT Composite scores and gender. The null hypothesis was not rejected, as gender was not found to be a contributing factor to the prediction of ACT Composite scores (F (1, 141) = 0.424, p = .516); Sig. F change = .424), contributing 0.3% (R^2 = .003) of the variance. This finding is consistent with research question one, where gender was also not found to have a significant relationship with predicting SAT Composite scores.

The second null hypothesis stating that there is no statistically significant relationship between ACT Composite scores and prior academic achievement, controlling for gender, was rejected. SAT-10 scores were found to contribute 56.3% (R^2 change = .563) of the variability in ACT Composite scores, when controlling for gender (F (9,133) = 19,282, p < .001; Sig. F change < .001). This finding is consistent with the relationship of prior academic achievement to both SAT Composite and Writing scores.

The third null hypothesis stated that there is no statistically significant relationship between school type and ACT Composite scores, when controlling for gender and prior academic achievement. The null hypothesis was rejected, as this model for predicting ACT Composite scores was found to be statistically significant (F (10, 132) = 17.268; p < .001). The model was found to have a relationship with predicting standardized achievement test scores.

The contribution of school type to the model, when controlling for gender and prior academic achievement, was not found to be statistically signification (Sig. F change = .424). These results do not support the premise that school type has a relationship with ACT Composite scores. Although the UMS® students scored 0.243 points higher on the ACT Composite exam, (B = -0.243), the 95% confidence intervals of -1.342 to 0.855 cannot affirm that if this study were reproduced the same results would be found. Because the school type β value was -.026, this would mean that there was no practical significance between the type of school that a student attended and the ACT Composite score.

Table 3

Sequential Multiple Regression Model for ACT Composite

	R^2 Change	*F* Ratio/ R^2 Change	*B*	*SE B*	β	*t*	Sig.	95% CI *B* *LL*	UL
Block 1	.003	.424							
Block 2	.563	21.577*							
Block 3	.001	.192							
Gender			0.588	0.547	.071	1.074	.285	-0.494	1.670
SAT-10 Total Reading/Vocabulary			0.010	0.004	.170	2.236	.027*	0.001	0.018
SAT-10 Reading Comprehension			0.005	0.004	.083	1.346	.180	-0.003	0.013
SAT-10 Math			0.028	0.010	.215	2.724	.007*	0.008	0.049
SAT-10 Language Mechanics			-0.014	0.009	-.117	-1.536	.127	-0.031	0.004
SAT-10 Language Expression			0.016	0.009	.156	1.791	.076	-0.002	0.034
SAT-10 Spelling			0.004	0.005	.042	0.663	.509	-0.007	0.014
SAT-10 Science			0.015	0.005	.178	2.820	.006*	0.005	0.026
SAT-10 Social Science			0.049	0.014	.302	3.634	.000*	0.022	0.076
School Type			-0.243	0.555	-.026	-0.438	.662	-1.342	0.855

Note. SAT-10 scores are scaled scores

CI = confidence interval; *LL* = lower limit; *UL* = upper limit

*$p < .05$; $\alpha = .05$

Summary of Results

Gender (and block one) was found to have a statistically significant relationship with academic college readiness as measured by the SAT Writing exam, but not SAT Composite or ACT Composite. Block two and SAT-10 scores have a statistically significant relationship with academic college readiness as measured by SAT Composite, SAT Writing, and ACT Composite exams. School type has a statistically significant relationship with academic college readiness as measured by the SAT Composite exam, but not for SAT Writing and ACT Composite. Block three was found to have a statistically significant relationship with academic college readiness as measured by SAT Composite, SAT Writing, and ACT Composite exams. This implies that a prediction model that tests the relationship between school type and academic college readiness when controlling for gender and prior academic achievement is a viable model.

Discussion of the Findings

This study indicated that there is a statistically significant relationship between academic college readiness when measured by the SAT Composite exam and school type. The regression coefficient for school type for the SAT Composite exams was B = -32.081 ($SE\ B$ = 15.656), which shows that UMS® students scored higher than traditional, comprehensive Christian school students, with -63.665 to -1.937 at the 95% confidence level. This appears to support the premise that UMS® are preparing their students for the academic challenges of college.

The addition of ACT scores to the prediction model was not found to be statistically significant (*Sig. F*change = .662). Several explanations may be possible for this result. First, the SAT and the ACT exams measure different skills. They both measure achievement in specific content areas; however, the SAT also looks at a student's reasoning and problem-solving skills (College Board, The SAT® Program Handbook, 2009). UMS® seniors demonstrated their mastery of content material and higher order thinking skills. The format of UMS® schools may have a relationship with why these students performed better on the SAT Composite exam; however, this was not included in the parameters of this study. Another reason may be that the sample size for the ACT was smaller than for SAT (N = 144).

On the other hand, the ACT results affirm the SAT Composite score results as they were also higher for UMS® students (B = -.243; $SE\ B$ = .555). The same holds true for the SAT Writing scores, where UMS® students scored higher (B = -.8.822; $SE\ B$ = 9.784), with -28.110 to 10.465 at the 95% confidence level. Once again, these scores were not statistically significant (*Sig. F* change = .368). Since the SAT Writing section is considered the most highly predictive of college success, this finding is important, as both traditional, Christian schools and UMS® must consider the importance of preparing their students to write well (Kobrin, Patterson, Shaw, Mattern, & Barbuti, 2008). The model to predict academic college readiness that included school type as a predictor for the SAT Writing produced statistically significant results (F = (11,210) – 19.681, $p < .001$), with a total change of 50.8%.

Gender was found to be a statistically significant predictor of academic college readiness when measured by the SAT Writing score. The average score for females was 49.932 points higher than males on this one exam, plus or minus 10.113 points, when controlling for other factors. Gender was not found to be a statistically significant predictor of academic college readiness for the SAT Composite and the ACT Composite.

The model of predicting academic college readiness using prior academic achievement as a predictor variable (while controlling for gender) was statistically significant for all three tests. The SAT-10 was taken during grades 7, 8, and 9, so these scores could possibly guide administrators and guidance counselors as they counsel students entering high school. Encouragement to take rigorous, relevant courses is a must for college readiness.

The model of predicting academic college readiness by examining school type while controlling for prior academic achievement and gender was also found to be statistically significant, and thus a viable prediction model. This finding seems to affirm that there is a relationship with the type of school a student attends and his or her readiness for college academics. One must be cautious, however, in drawing conclusions based upon one study, for the varying statistics produced by a study can be interpreted in different ways. For example, when using the more controversial standardized regression coefficients, school type did not yield a β value demonstrating practical significance for any of the tests of academic college readiness. This value implies that there was no relationship between the scores on the SAT Composite, the SAT Writing, and the ACT Composite and the type of school the student attended. In addition, it is important to point out that the SAT Writing section is considered the most highly predictive of college success (The SAT® writing section, 2008). In this study, there was no statistically significant difference between the scores of the two types of Christian schools, implying that school type did not play a significant role in preparing students for college.

When considering that students in the UMS® schools are not in attendance at the traditional brick and mortar school for as many days as the traditional, comprehensive Christian school students, having comparable scores (or when

considering the unstandardized coefficients, higher scores), seems to show that the amount of time one spends in school is not as important as the type of education that one receives. This study seems to indicate that the UMS® students in this study did not suffer an academic penalty because of attending a non-traditional school.

There are several limitations of this study. First, not all extraneous variables were considered, such as family size, parental educational achievement, learning disabilities, and socio-economic background. Secondly, although an effort was made to control for differences in the school setting, each school offered students a unique educational experience that was beyond the control of the researcher. The number of years a school had been in existence, the financial well-being of the school, and the physical location of the school were not considered. The difference in academic program between schools, including teaching pedagogy, is also a limitation of the study.

Another limitation is that the results cannot be generalized to other populations. The study was limited to six Christian schools located near Dallas, Texas that follow either a traditional, comprehensive or a UMS® program; therefore, the results are limited to these six schools. The results may not be applicable to schools in other states, nor to schools of different types. 93.75% of the students in the study were Caucasian; therefore, the results may not apply to schools with greater diversity.

This study was limited to academic college readiness indicators; therefore predictions concerning whether those in the sample will ultimately experience college success is beyond the realm of this study. Whereas SAT and ACT scores have been found to be predictive of college success (DeBerard, Spielmans, & Julka, 2004; Noble & Sawyer, 2004), so have high school GPA and class rank (Harackiewicz, Barron, Tauer, & Elliott, 2002; Kahn & Nauta, 2001; Strauss & Volkwein, 2002; Wade & Walker, 1994; Kirby, White, & Aruguete, 2007). Future studies using these predictor variables would add to the body of literature.

Personality traits and learned behaviors, such as academic self-efficacy, study skills, self-management, intrinsic motivation, self-regulation, and work drive have also been found to be related to college success (Robbins, Lauver, Le, Davis, Langley, & Carlstrom, 2004; Le, Casillas, & Robbins, 2005; Kitsantas, Winsler, & Huie, 2008). Perhaps a future study could use the Student Readiness Inventory to determine if these psychosocial and academic factors are a bi-product of the unique scheduling aspect of a UMS® education.

This study was a preliminary one using school type, and more specifically UMS® and traditional, comprehensive Christian schools, in order to determine their relationship to academic college readiness. A study using data from students who have attended schools throughout the United States would add to the body of knowledge contributed by this one study. A larger sample size would allow for greater generalization of the results, especially with the inclusion of more scores on the ACT exam.

In addition, since the two key components of the UMS® program are college readiness and character development, a future study including a qualitative component to determine if enrollment in a UMS® school contributes to the character development of its graduates would be highly beneficial. Since the parental role is so critical to the success of this model, research to determine if family size, the educational make-up of the parents, and the overall parental influence on the student could be topics for future studies. Further study concerning additional components of UMS® schools is not only recommended, but encouraged.

Conclusions

The research findings of this study could have implications for educational leaders facing the need for high school reform and the decision of what type of school produces college-ready students. As a model for predicting academic college readiness, the inclusion of school type was found to be a valid inclusive predictor variable. This affirms the importance of looking at school characteristics as playing a role in preparing students for academics at the college level.

Educators must consider the three primary elements deemed necessary for an effective high school: a rigorous, relevant curriculum; a supportive learning environment; and parent/teacher cooperation.

One key element of the UMS® type of school is the inclusion of more time at home with parents and not in the central classroom. The current model of education that includes the accumulation of

Carnegie units based on amount of time the students sit in the central classroom is being questioned in numerous venues, including by proponents of University Model Schools® (Childers & Ireland, 2005; Danielson, 2002). Perhaps educational leaders should look more closely at how time is spent in the classroom and at home instead of focusing on the amount of time the students spend in the central classroom. This study demonstrated that students can be academically ready to attend college even if they don't spend the traditional amount of time in a school setting.

This study does not reinforce Hoxby, Murarka, and Kang's findings (2009) that there is a positive association between a long school year and academic achievement. It also does not back President Obama's 2009 endorsement for extending the amount of time American children spend in school. On the other hand, it agrees with the researchers that have indicated that it is not the amount of time that students spend in the classroom that is important; but rather the change in the curriculum that is offered that contributes to greater student success (Mendrala, 2010).

Instead of proposing extended time in the classroom, the UMS® model emphasizes rigorous academics and character development (Turner, 2001). In addition, the UMS® founders have created a school where parents share the teacher role, where students are taught in a supportive learning environment, and where students have access to a rigorous curriculum that prepares them academically for college. Conley (2008) noted that parental involvement has a direct correlation with preparing ones children for transition to college. Research studies by Lloyd-Smith and Baron (2010) and Thompson and Ongaga (2011) affirmed the positive correlation between parental involvement and student achievement. In their studies, caring relationships were important to students and were effective in increasing achievement when linked with high expectations. It would appear that the results of this study affirm the UMS® "foundational premise that meaningful and positive parental mentoring makes the biggest difference in a child's education" (Turner, 2001, p. 52).

Most importantly, when using the regression coefficient, this study provides statistical findings to back the claims of UMS® educators that they can and do prepare their students for college. It seems to give legitimacy to a high school reform model that lacked sufficient data to ensure its continuation. One must be cautious, however, in drawing conclusions based upon one study, for the varying statistics produced by a study can be interpreted in different ways. For example, when using the more controversial standardized regression coefficients, school type did not yield a β value demonstrating practical significance for any of the tests of academic college readiness. This value implies that there was no relationship between the scores on the SAT Composite, the SAT Writing, and the ACT Composite and the type of school the student attended. This statistic would limit the findings of the study to stating that at minimum, it affirms that UMS® seniors are not penalized academically for attending this unique type of school. When considering that students in the UMS® schools are not in attendance at the traditional brick and mortar school for as many days as the traditional, comprehensive Christian school students, having comparable scores (or when considering the unstandardized coefficients, higher scores), seems to indicate that the amount of time one spends in school is not as important as the type of education that one receives. This study seems to indicate that the UMS® students located at the three schools in Texas did not suffer an academic penalty because of attending a non-traditional type of school.

Perhaps those outside of Christian school circles will take notice of the results of this study and look carefully at what the different types of Christian schools are doing well. Christian schools have a place in the educational world, and in the world of academic research. They have strengths and weaknesses, just as public and other private schools do, but they must be viewed as valid school models that produce students who are ready for college academics.

An important conclusion of the 2011 Cardus Survey was that it is possible for Christian schools to produce "college-worthy, character-witnesses of Christ" (NAUMS home page). This is exactly the goal of traditional, comprehensive Christian schools and UMS® schools. "Academic rigor need not be sacrificed on account of either faith development or commitment to cultural engagement" (Pennings, Seel, Van Pelt, Sikkink, & Wiens, 2011).

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