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An Evaluative Study of the Academic Achievement of Home-schooled Students Versus Traditionally Schooled Students Attending a Catholic University

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This research study was designed to provide a formal evaluation of the academic achievement of homeschooled students compared to traditionally schooled students attending a Catholic university located in South Florida. In addition, this study offers empirical data for all those interested in the academic success of homeschooled students in higher education, in particular, in Catholic colleges and universities. Using archival data, 408 students were evaluated based on their four-year secondary school type: 137 public-schooled students; 142 Catholic-schooled students; and 129 homeschooled students. Equally weighted criteria were overall SAT or ACT scores, overall college grade-point average (GPA), GPA by major, and core GPA. A statistically significant difference was found between homeschooled students and traditionally schooled students in ACT and SAT scores and overall GPA, showing value to the institution and supporting the literature with regards to the academic viability of homeschooled students in college.

The number of homeschooled students in the United States has more than doubled in the last ten years. According to the U.S. Department of Education's National Center for Education Statistics (1999), approximately 850,000 students in kindergarten through grade 12 (K-12) were homeschooled in 1999. More recent data from the 2007 National Household Education Survey estimates this number to be approximately 1.5 million homeschooled students (National Center for Education Statistics, 2007). However, as many households often do not respond to surveys, a more accurate estimate of the number of homeschooled students in the United States is most likely closer to two million or more (Lips & Feinberg, 2008). The growth in the number of homeschooled students in the U.S. makes homeschooling one of the fastest-growing educational sectors (Ray, 2004).

As the number of homeschooled students continues to rise, attaining information on various outcome measures, such as academic achievement, remains a challenge (Lips & Feinberg, 2009). However, studies conducted on the aca-

demographic achievement of homeschooled students have shown that these students fare as well as, if not better than, traditionally schooled students (Ray, 2004). For example, in a landmark U.S. national study, Rudner (1999) administered academic achievement tests to 20,760 primary and secondary homeschooled students. Results showed that homeschooled students' achievement-test scores were significantly higher than those of their public- and private-school counterparts.

Furthermore, Clemente (2006) conducted a study to determine if there was a statistically significant difference in the college aptitude of homeschooled high school seniors compared to traditionally schooled students who subsequently attended Christian colleges. Clemente's results indicated that the homeschooled students' mean test score on the SAT (including verbal and mathematics sections) was 1123, whereas private- and public-school students averaged 1054 and 1039, respectively. Tests used for analyzing the data revealed a significant difference in homeschooled students' SAT test scores when compared to their conventional school counterparts.

Multiple studies have indicated that homeschooled students perform as well as, if not better than, traditionally schooled students in K-12 academics; however, the literature on the academic achievement of homeschooled students in higher education is scant (Saunders, 2006). Moreover, the research on the academic achievement of homeschooled students who attend higher education has focused solely on students attending non-Catholic colleges and universities, either public or private (e.g., Cogan, 2010; Galloway, 1995; Gray, 1998; Holder, 2001; Jenkins, 1998; Jones & Gloeckner, 2004a, 2004b; Ray, 2004; Ray & Eagleson, 2008; Rudner, 1999; Sutton & Galloway, 2000). Little research has been done on the academic achievement of homeschooled students attending Catholic colleges or universities.

At the writer's place of work, a Catholic university in South Florida, the university's website indicates that the homeschooling population is approximately one-third of its overall student body. However, only anecdotal evidence exists regarding their academic achievement in college when compared to their traditionally schooled counterparts. Therefore, the purpose of this study was to provide the writer's university (a Catholic university) empirical evidence on the academic achievement of a major portion of its student body as well as add to the research literature and make inferences about the academic viability of homeschooled students attending Catholic colleges in general. For the purpose of this article, a homeschooled student will be defined as any student educated at home rather than school and a traditionally schooled student will

be defined as any student educated in either a public or private school.

History of Homeschooling

The concept of homeschooling is certainly not a new idea to American education, with the first colonists homeschooling their children out of necessity (Wilhelm & Firmin, 2009). However, the history of modern homeschooling can be traced back to the 1960s and 1970s as a reactionary response by religious fundamentalists (ideologues from the countercultural right) and experimental unschoolers (pedagogues from the countercultural left) to the perceived inadequacies of the public school educational system (Aurini & Davies, 2005; Gaither, 2008). Emerging as the representative of the countercultural left's disappointment with public school pedagogy was John Holt (Knowles, Marlow, & Muchmore, 1992). According to Holt (1967), children learn best not because they are compelled to do so by those in authority, but because of their own personal interests and curiosity. Therefore, children ought to be in control of their learning; children learn best when they decide what it is they want to learn and how to go about learning it (Holt, 1967).

After working extensively to reform schools from within the educational system, Holt realized that schools could not be reformed as he envisioned. He quit teaching and focused his energies on the alternatives to conventional schooling by disseminating his views in a bimonthly magazine created in 1977 called *Growing Without Schooling* (Holt, 1981). For the followers of Holt's ideology, homeschooling became synonymous with unschooling. What became important was not that the home was a better school than a traditional school, but that the home was not a school at all (Holt, 1981). Holt's (1976) support of homeschooling (unschooling) and his disgust with traditional schooling were made explicit when he said, "Meanwhile, education—compulsory schooling, compulsory learning—is a tyranny and crime against the human mind and spirit" (p. 222).

Another pioneer of modern homeschooling was Raymond Moore. According to Lyman (1998), Moore, a former U.S. Department of Education employee and doctor of education, set out to answer two fundamental questions: "Is institutionalizing young children a sound, educational trend, and what is the best timing for entrance?" (p. 6). After speaking with over 100 family-development specialists and analyzing thousands of studies, Moore (and his wife, Dorothy) concluded that despite children's eagerness to enter formal schooling (at ages four, five, six, and so on), they quickly become bored and tired of school

before they are out of the third and fourth grades (Moore, n.d.). Moore's findings on the benefits of delayed schooling led to an interest in homeschooling. Due to Moore's Christian background, he drew a sizable following of Christians, but his message was well received by people from many different faith backgrounds (Lyman, 1998).

The major religious (ideological) exodus from public schooling to homeschooling came from Protestants in the mid-1960s and 1970s. Anecdotally, Carper (2000) attributed this to, among other things, "Darwinism, higher criticism of the Bible, the fundamentalist-modernist controversy, and growing cultural and religious diversity" (p. 15). Supreme Court decisions in *Abington Township v. Schempp* in 1963, *Engel v. Vitale* in 1962, and *Murray v. Curlett* in 1963 (as cited in Wilhelm & Firmin, 2009) to remove prayer and Bible readings from public schools marked only the culmination of the already growing half-century movement toward further separation between church and state.

At the same time, strong movements were being made by the Court regarding desegregation (e.g., *Brown v. Board of Education*, 1954). In the early 1960s, in response to desegregation, many conservative Protestants were upset by the fact that while many minorities were allowed into schools, God was left out (Gaither, 2008). According to Carper (2000), Protestants reacted strongly to the public-school rejection of prayer and the Bible and the advancement of desegregation, secular humanism, and moral relativism. Some tried to reform the schools from within; others responded by withdrawing their children from public schools and forming their own independent, Christian schools; and still others responded by abandoning institutional education altogether for homeschooling in an attempt to restore education to its purest form—a parent teaching a child at home. This phenomenon is now embraced by people not only in the United States but also all over the world (McIntyre-Bhatty, 2007).

Academic Achievement of Homeschoolers in College

Time has shown that the acceptance of homeschooling has produced not only an increase in the number of K-12, homeschooled students, but students who do as well academically as their conventional school counterparts. Yet, how do homeschooled students fare academically once admitted to college? Several studies attempt to answer this question.

Cogan (2010) conducted a quantitative study for the purpose of examining the academic outcomes of homeschooled students at a midsized, private institution in the upper Midwest. Data collected were from a census file housed in

the institution's comprehensive data warehouse. Results indicated that homeschooled students were more likely than traditionally schooled students to be male and Catholic and were 2.5 times more likely to receive a Pell Grant. Homeschooled students on average achieved a higher ACT composite score (26.5), earned more college credit as incoming freshmen, had a higher one-year cumulative GPA (3.41), had a higher four-year cumulative GPA (3.46), performed at the same level with regards to fall-to-fall retention rate, and had a higher four-year graduation rate (66.7%) and overall retention rate (88.6%) when compared to traditionally schooled students (O'Shaughnessy, 2010).

Additionally, Jones and Gloeckner (2004a) conducted a quantitative study to determine if any significant differences existed, within the area of academic achievement, between homeschooled and traditionally schooled students attending their first year of college. A random sample of 55 homeschooled and 53 traditionally schooled students was taken from four-year public colleges and universities in Colorado. The data collected identified the high school graduates as being either homeschooled or traditionally schooled. While not statistically significant, the results indicated that homeschooled students scored higher in average GPA (2.78 compared to 2.59), credits earned, and ACT scores, when compared to their traditionally schooled counterparts (Jones & Gloeckner, 2004b). However, ACT composite scores as well as the math and science subtests approached statistical significance. Analyses indicated that homeschooled students were as academically prepared for college as traditionally schooled students.

Furthermore, Jenkins (1998) conducted a study that focused on the academic achievement of homeschooled students at community colleges located in Texas. This state was chosen because reports indicated Texas had one of the largest homeschool populations in the country; yet no official information on numbers could be found for the state (Jenkins, 1998). For Jenkins's study, full- and part-time homeschooled students were compared to first-time, full- and part-time, community-college freshmen. Jenkins used 101 transcripts to measure the academic performance of these students. GPA and Texas Academic Skills Program (TASP) tests were analyzed to determine if any significant differences existed between homeschooled and traditionally schooled students. Jenkins's results indicated significant differences (a) between full-time homeschooled students (3.06 GPA) and first-time, full-time, traditionally schooled students (2.56 GPA) and (b) between part-time, homeschooled students (3.28 GPA) and first-time, part-time, traditionally schooled students (2.40 GPA).

With regard to the TASP test scores, homeschooled students performed

significantly better than traditionally schooled students on the reading and math sections of the test; however, no significant difference was found between homeschooled and traditionally schooled students on the writing portion of the test (Jenkins, 1998). These results suggest that homeschooled students are academically prepared for community college.

Sutton and Galloway (2000) also examined the college success of students from three different high school backgrounds: (1) public schools, (2) private schools, and (3) the home educated. Participants for this study included 17 public-school graduates, 26 private-school graduates, and 21 homeschool graduates. Indicators of college success consisted of 40 variables centered on five domains: (1) academic achievement, (2) leadership, (3) professional aptitude, (4) social behavior, and (5) physical activity. Results indicated that, generally speaking, no statistically significant differences were found among the three groups of students (33 out of the 40 variables tested revealed no significant difference). According to Sutton and Galloway, this finding led to the conclusion that, regardless of high school educational setting (home school, private school, and public school), all college-bound students are being prepared equally well for academic success in college.

The present study aimed to add to the aforementioned studies by answering the following research questions.

Research Questions

1. Is there a statistically significant difference in overall SAT or ACT scores by secondary school type (homeschooled, public-schooled, and Catholic-schooled students)?
2. Is there a statistically significant difference in overall college GPA by secondary school type (homeschooled, public-schooled, and Catholic-schooled students)?
3. Is there a statistically significant difference in GPA by major by secondary school type (homeschooled, public-schooled, and Catholic-schooled students)?
4. Is there a statistically significant difference in core GPA by secondary school type (homeschooled, public-schooled, and Catholic-schooled students)?
5. Compared to public-schooled and Catholic-schooled students, how much academic merit or value do homeschooled students bring to a Catholic university?

Methodology

Participants

The sample population for this study included all first-time college undergraduate students ($N = 408$) enrolled in a private, liberal arts, Catholic university located in South Florida between fall 2007 and fall 2010. Of these, 137 (33.6%) were public-schooled students, 142 (34.8%) were Catholic-schooled students, and 129 (31.6%) were homeschooled students. Transfer students were excluded from the study as were any and all students who did not meet the criterion of attending a single secondary school type for all four years. Moreover, as the number of non-Catholic, private school students were minimal, these students were also excluded from the study.

With regards to sample population demographics, approximately 47% of the students were male and 53% female. Class-level sizes included 33% freshmen, 27% sophomores, 22% juniors, and 18% seniors. In regards to ethnicity, approximately 65% of the students were White, 15% Hispanic, 3% Black, 5% Asian, and 12% unknown. Moreover, in regards to religious affiliation, approximately 79% of the students were Catholic and 21% of the students came from different religious backgrounds.

As the sample population equaled the current population of four-year homeschooled and traditionally schooled students, this population was treated as a simple random sample that was used to make inferences in regards to the academic achievement of future students attending the same institution *as well as* other similar Catholic colleges. There was no reason to believe that the academic achievement of the current population of students attending the university would be different from future students attending the same institution or other Catholic colleges with similar characteristics. Therefore, sampling error was negligible and a high level of generalizability was assumed.

Procedures

Design. The research methodology that was used in this study was an evaluation design. According to Davidson (2005), an evaluation is defined as “the systematic determination of the quality or value of something” (p. 1). The overarching framework for the design, carrying out, and reporting of results for this evaluation methodology was Scriven’s (2003) Key Evaluation Checklist

(KEC). The KEC was used for the evaluation of the academic achievement of homeschooled students, hereafter referred to as the evaluand, attending the above-mentioned Catholic university, hereafter referred to as the focus institution.

The purpose of this evaluation was to determine the overall value, or quality, of the evaluand in regards to their academic achievement in college. The type of evaluation was summative; its main purpose was simply to report this information, as opposed to making any suggestions for the improvement of the evaluand itself. Moreover, the type of evaluation question that was asked was geared toward seeking the relative quality of the evaluand as opposed to the absolute quality (Davidson, 2005). According to Davidson (2005), questions that seek to determine the relative value or quality of something are “always asked in comparison with one or more other evaluands” (p. 18). The “other” evaluand for this study was achievement of both public-schooled and Catholic-schooled students attending the same focus institution.

Furthermore, sound evaluations are grounded on establishing appropriate and clear criteria on which to base judgments in regards to the value of the evaluand (Stufflebeam, 2001). The main criteria that were used to judge the academic aptitude and achievement of homeschooled students compared to traditionally schooled students included the following: (a) overall SAT or ACT scores, (b) overall college GPA, (c) GPA by major, and (d) core GPA. These criteria were further linked to the first four research questions for this study, respectively. Each criterion was weighted equally and was used to answer the first four research questions. Based on the answers to these four research questions, the writer was able to answer Research Question 5, which was the evaluation question.

According to Scriven (1991), an important part of any evaluation is identifying the intended effects, or results, based on pre-established criteria (such as those mentioned above). For the purpose of this study, however, a goal-free, as opposed to goal-based, evaluation was used. In goal-free evaluation, specific goals or stated achievements are intentionally avoided, so as to take into account all possible effects. Additionally, in goal-free evaluation, the goal-free evaluator is more concerned with what the evaluand is actually doing as opposed to what the evaluand ought to be doing.

Fundamental to any good evaluation is knowing, in advance, the consumers (impactees) or stakeholders of the evaluation (Gangopadhyay, 2002). According to Gangopadhyay (2002), knowing who the consumers or stakeholders are up front is critical in clearly delineating the context in which evaluation results

will be used. Moreover, consumers or stakeholders can be classified as both immediate and downstream recipients. For this study, the immediate recipients of the evaluation were the administrative personnel at the focus institution, for whom this evaluation was being conducted. Downstream recipients, which are always harder to identify, included, but were not limited to, faculty and staff at the focus institution, admissions and student services professionals in other Catholic colleges and universities, and homeschooled students, parents, and all those interested in the homeschooling movement in general.

Data analysis. For this evaluative design, two intact, independent groups were compared (homeschooled and traditionally schooled students) to determine any statistically significant difference between secondary school type and academic aptitude or achievement in college. The hypothesis was that homeschooled students' mean academic performance would be significantly higher than that of traditionally schooled students in all categories of academic achievement (e.g., overall SAT or ACT scores, overall college GPA, GPA by major, and core GPA), resulting in a superior merit or value of homeschooled students for the focus institution. Therefore, the four null hypotheses were the following, resulting in a final null hypothesis of no noticeable merit or value of homeschooled students for the focus institution:

1. Homeschooled students' mean academic performance will not be significantly higher than that of traditionally schooled students in SAT and ACT scores.
2. Homeschooled students' mean academic performance will not be significantly higher than that of traditionally schooled students in overall college GPA.
3. Homeschooled students' mean academic performance will not be significantly higher than that of traditionally schooled students in major GPA.
4. Homeschooled students' mean academic performance will not be significantly higher than that of traditionally schooled students in core GPA.

As the independent variable (schooling type) was categorical and the dependent variables (SAT/ACT scores and GPA) were continuous, an independent-samples *t* test was used as the statistic for analyzing data. Moreover, in view of the fact that the sample size was larger than that required by the central limit theorem, normal distribution of sample means was assumed. The

alpha level was set at 0.05, and a one-tailed test was used in favor of homeschooled students having higher academic achievement levels. The bias toward homeschooled students was the result of literature support in favor of homeschooled students (e.g., Clemente, 2006; Cogan, 2010; Galloway, 1995; Gray, 1998; Holder, 2001; Jenkins, 1998; Jones & Gloeckner, 2004a, 2004b; Ray, 2004; Ray & Eagleson, 2008; Rudner, 1999; Sutton & Galloway, 2000). After *p*-values were calculated, results were used to determine statistical significance and consequently either reject or fail to reject the null hypotheses.

The major evaluative criteria, or dimensions, chosen for assessing student academic achievement included the following: Dimension 1, overall SAT or ACT scores; Dimension 2, overall college GPA; Dimension 3, GPA by major; and Dimension 4, core GPA. Moreover, knowing the importance of the criteria is essential for any good evaluation. Such knowledge allows one to “prioritize improvements, identify whether identified strengths or weaknesses are serious or minor, and/or work out whether an evaluand with mixed results is doing fairly well, quite poorly, or somewhere in between” (Davidson, 2005, p. 101).

Each dimension was judged equally important to assessing the overall value of the evaluand. SAT and ACT scores, as previously mentioned, are important inasmuch as they serve as the major criterion for college admission (Hsu & Schombert, 2010). Furthermore, according to Hsu and Schombert (2010), SAT and ACT scores carry with them considerable predictive power in determining student academic performance in college. However, once accepted into college, overall college GPA becomes just as important in measuring actual student learning and growth; as such, GPA is an important criterion for determining academic success in college (Graunke & Woosley, 2005). Nevertheless, according to Graunke and Woosley (2005), overall GPA can be a bit unreliable when comparing students who have taken different courses (i.e., some students take more or less rigorous courses than others), and thus examining GPA by major and core GPA becomes important for correcting this variation and measuring student academic achievement in college.

The ultimate purpose of this study was to evaluate the academic achievement of homeschooled students compared to traditionally schooled students attending a Catholic university. Therefore, once data were collected and analyzed, and the first four research questions were answered, the data were converted directly into a rating of the value of homeschooled students attending the focus institution, which was used to answer Research Question 5. The rubric in Table 1 was used to assess the relative value of homeschooled

students based on statistically significant differences in the above-mentioned dimensions.

Table 1: Rubric for Determining Relative Value of Homeschooled Students

Relative value	Description
Extremely valuable	Statistically significant difference in all four dimensions
Very valuable	Statistically significant difference in any three dimensions
Valuable	Statistically significant difference in any two dimensions
Marginally valuable	Statistically significant difference in any one dimension
Not noticeably valuable	No statistically significant difference in any dimension

Research Findings

Descriptive Results of the Evaluation

For the purpose of descriptively analyzing the data, the researcher used Microsoft Excel 2007. Spreadsheets were created for the following categories: SAT scores, ACT scores, overall college GPA, major GPA, and core GPA. Data were entered for each group of students—public-schooled, Catholic-schooled, and homeschooled students—under these categories. Once the data were entered, the researcher used Microsoft Excel 2007 to calculate mean scores and standard deviations.

In regards to standardized admission tests, students at the focus institution are required to submit either SAT or ACT scores. Each student was reported as submitting SAT scores, ACT scores, or both. The total sample size of ACT scores analyzed included 219 freshmen through senior students ($N = 219$). One hundred students were public schooled, 59 students were Catholic schooled, and 60 students were homeschooled. As shown in Table 2, the mean ACT composite score of Catholic-schooled students (24.53) was found to be slightly lower than the total mean (24.73). Moreover, the mean ACT composite score of public-schooled students (24.22) was found to be the lowest of the groups, and the mean ACT composite score of homeschooled students (26.00) was found to be the highest of the groups analyzed. Approximately 75% of public-schooled students fell within one standard deviation around the mean, as did approximately 66% of Catholic-schooled students and approximately 76% of homeschooled students. The higher percentage of public-schooled and homeschooled students, compared to Catholic-schooled students, indicated

that more of these students were clustered around the mean; however, normal distribution of data was still apparent.

Table 2: Descriptive Statistics for ACT Composite Score by School Type

School type	Mean	SD	N
Public schooled	24.22	3.81	100
Catholic schooled	24.53	4.54	59
Homeschooled	26.00	4.43	60
Total	24.73	4.20	219

The total sample size of SAT scores analyzed was 265 freshmen through senior students. Seventy-four students were public schooled, 106 students were Catholic schooled, and 85 students were homeschooled. Similar to ACT composite scores, the mean SAT total score of Catholic-schooled students (1761.04) was found to be slightly lower than the total mean (1779.36). Moreover, the mean SAT total score of public-schooled students (1706.76) was found to be the lowest, and the mean SAT total score of homeschooled students (1864.94) was found to be the highest. Approximately 68% of public-schooled students and Catholic-school students fell within one standard deviation around the mean, as did approximately 67% of homeschooled students. The distribution of data was consistent with a near-perfect bell curve for all school types.

Table 3: Descriptive Statistics for SAT Total Score by School Type

School type	Mean	SD	N
Public schooled	1706.76	219.34	74
Catholic schooled	1761.04	245.46	106
Homeschooled	1864.94	250.78	85
Total	1779.36	247.70	265

The total sample size of overall GPA analyzed was 408 freshmen through upper division senior students. Of these, 137 students were public schooled, 142 were Catholic schooled, and 129 were homeschooled. Overall GPA included overall student academic performance in all subjects. For example, overall GPA included grades obtained in any and all general-education, required courses (core courses) as well as grades obtained in major-specific courses.

Similar to ACT composite scores and SAT total scores, the mean overall GPA of Catholic-schooled students (2.88) was found to be slightly lower than the total mean (2.89). Moreover, the mean overall GPA of public-schooled

students (2.66) was found to be the lowest, and the mean overall GPA of homeschooled students (3.14) was found to be the highest. None of the grades used to determine GPA were weighted due to honors classes. Approximately 66% of public-schooled students fell within one standard deviation around the mean, as did approximately 65% of Catholic-schooled students and approximately 64% of homeschooled students. Similar to SAT total scores, the distribution of overall GPA data was consistent with a near-perfect bell curve for all school types.

Table 4: Descriptive Statistics for Overall Grade-Point Average by School Type

School type	Mean	SD	N
Public schooled	2.66	0.8662	137
Catholic schooled	2.88	0.7103	142
Homeschooled	3.14	0.6787	129
Total	2.89	0.7806	408

The total sample size of major GPAs analyzed was 164 upper division junior and senior students. Juniors and seniors were included in the analysis because only these students had completed the required core curriculum and had reported grades for courses associated with a major. However, individual student majors were not separately identified and analyzed in this study. According to the focus institution's website, students have the option to choose from 12 majors in pursuit of a bachelor of arts degree.

Forty-two students were public schooled, 54 were Catholic schooled, and 68 were homeschooled. Unlike the mean ACT composite scores, SAT total scores, and overall GPA, the mean major GPAs by secondary school type were relatively similar. Nevertheless, the mean major GPA of Catholic-schooled students (3.12) was still found to be slightly lower than the total mean (3.14). Moreover, the mean major GPA of public-schooled students (3.07) was found to be the lowest, and the mean major GPA of homeschooled students (3.20) was found to be the highest. Approximately 71%, 65%, and 71% of public-schooled, Catholic-schooled, and homeschooled students, respectively, fell within one standard deviation around the mean.

Table 5: Descriptive Statistics for Major Grade-Point Average by School Type

School type	Mean	SD	N
Public schooled	3.07	0.7516	42
Catholic schooled	3.12	0.5358	54
Homeschooled	3.20	0.6477	68
Total	3.14	0.6410	164

The total sample size of core GPAs analyzed was 165 upper division junior and senior students. Forty-two students were public schooled, 54 were Catholic schooled, and 69 were homeschooled. Junior and senior students only were included in the analysis because only these upper division students had completed the core curriculum. The core curriculum consists of the students' first 64 credits. According to the focus institution's website, the core curriculum provides students the opportunity to take courses in the tradition of the liberal arts and fine arts. Core GPA was determined based on grades earned in these credits.

Similar to the mean major GPA, the mean core GPAs by secondary school type were relatively similar. Nevertheless, the mean core GPA of Catholic-schooled students (3.02) was still found to be slightly lower than the total mean (3.04). Moreover, the mean major GPA of public-schooled students (2.97) was found to be the lowest, and the mean major GPA of homeschooled students (3.11) was found to be the highest. Approximately 55% of public-schooled students fell within one standard deviation around the mean, as did 63% of Catholic-schooled students and 61% of homeschooled students.

Table 6: Descriptive Statistics for Core Grade-Point Average (GPA) by School Type

School type	Mean	SD	N
Public schooled	2.97	0.6468	42
Catholic schooled	3.02	0.5262	54
Homeschooled	3.11	0.6614	69
Total	3.04	0.6156	165

Inferential Results of the Evaluation

As previously mentioned, a one-tailed, independent-samples *t* test, in favor of homeschooled students, was used to determine if a statistically significant difference existed between homeschooled students and their public-schooled and Catholic-schooled peers in the categories of overall SAT or ACT scores and

college GPA (overall GPA, major GPA, and core GPA). With an alpha level of 0.05, the mean SAT or ACT scores and mean GPAs, standard deviations, and sample sizes of homeschooled, public-schooled, and Catholic-schooled students were used to determine p -values, which in turn were used to determine statistical significance. The determination of statistical significance was used to reject or fail to reject the null hypotheses and thus answer the five research questions.

Research Question 1. The first research question included two parts: ACT scores and SAT scores. In regards to the first part of Research Question 1 (ACT scores), a significant difference was found between homeschooled and public-schooled students at a value of $p = 0.0054$. A significant difference was also found between homeschooled and Catholic-schooled students at a value of $p = 0.0382$. Therefore, the null hypothesis was rejected and the first part of Research Question 1 was answered in the affirmative.

Table 7: Independent-Samples t-Test Results for ACT Composite Score by School Type

School type comparison	t	p	df
Public schooled vs. homeschooled	-2.5911	.0054**	110.2058
Catholic schooled vs. homeschooled	-1.7883	.0382*	116.7944

* $p < .05$. ** $p < .01$.

In regards to the second part of Research Question 1 (SAT scores), a significant difference was found between homeschooled and public-schooled students at a value of $p = 0.00002$. A significant difference was also found between homeschooled and Catholic-schooled students at a value of $p = 0.00228$. Therefore, the null hypothesis was rejected and the second part of Research Question 1 was answered in the affirmative.

Table 8: Independent-Samples t-Test Results for SAT Score by School Type

School type comparison	t	p	df
Public schooled vs. homeschooled	-4.2427	.00002***	156.9953
Catholic schooled vs. homeschooled	-2.8725	.00228**	178.4031

** $p < .01$. *** $p < .001$.

Research Question 2. The results related to the second research question, overall GPA, revealed that a significant difference was found between homeschooled and public-schooled students at a value of $p = 0.0000003$. A significant difference was also found between homeschooled and Catholic-schooled students at a value of $p = 0.0013769$. Therefore, the null hypothesis was rejected, and the second research question was answered in the affirmative.

Table 9: Independent-Samples
t-Test Results for Overall Grade-Point Average by School Type

School type comparison	t	p	df
Public schooled vs. homeschooled	-5.1280	.0000003***	255.6712
Catholic schooled vs. homeschooled	-3.0220	.0013769**	268.3068

p < .01. *p < .001.

Research Question 3. In regards to Research Question 3, major GPA, no significant difference was found between homeschooled and public-schooled students ($p = 0.17797$). No significant difference was also found between homeschooled and Catholic-schooled students ($p = 0.21255$). Therefore, the null hypothesis was not rejected, and the third research question was answered in the negative.

Table 10: Independent-Samples
t-Test Results for Major Grade-Point Average by School Type

School type comparison	t	p	df
Public schooled vs. homeschooled	-0.9287	.17797	77.2890
Catholic schooled vs. homeschooled	-0.8003	.21255	119.7815

Research Question 4. In regards to the fourth research question, core GPA, no significant difference was found between homeschooled and public-schooled students ($p = 0.13370$). No significant difference was found between homeschooled and Catholic-schooled students ($p = 0.21101$). Therefore, the null hypothesis was not rejected, and the fourth research question was answered in the negative.

Table 11: Independent-Samples
t-Test Results for Core Grade-Point Average by School Type

School type comparison	t	p	df
Public schooled vs. homeschooled	-1.1161	.13370	88.2526
Catholic schooled vs. homeschooled	-0.8057	.21101	120.9593

Research Question 5. A rubric designed by the researcher was meant to answer this question by equating statistical significance in the categories of SAT or ACT scores, overall college GPA, GPA by major, and core GPA, with varying levels of academic merit or value. A statistically significant difference was found between homeschooled students and traditionally schooled students in two categories (ACT or SAT scores and overall GPA). Major GPA and core GPA did not show any statistically significant difference. Therefore, the answer to Research Question 5 is that homeschooled students are academically valuable when compared to public-schooled and Catholic-schooled students.

Discussion

According to Lines (2000), the rise in homeschooling, as one of the most significant educational trends of the past half-century, has caused many to ask how well homeschooling has prepared students to move beyond primary and secondary education and succeed academically in college. From a student affairs perspective, college admission officers have reported admitting an increasing number of homeschooled students nationally and have spoken well of them in regards to their ability to compete at the same level academically as traditionally schooled students (Jones & Gloeckner, 2004b). Multiple studies show no reason to doubt the adaptability and academic aptitude of homeschooled students in college, finding no difference between these students and traditionally schooled students (Gray, 1998; Jones & Gloeckner, 2004a; Sorey & Duggan, 2008).

The results of this study support what was already known in the education literature about the academic ability of homeschooled students in college and provided empirical data about this ability for the focus institution as well as other Catholic colleges seeking to admit homeschooled students. As part of this study, four categories were used as a measure of academic aptitude and achievement, with each category equally weighted and analyzed: (i) ACT

and SAT scores, (2) overall college GPA, (3) major GPA, and (4) core GPA. Given the results of the study as measured by the evaluative rubric, homeschooled students attending the focus institution are just as valuable as public-schooled and Catholic-schooled students. The rating of valuable was determined by homeschooled students being found to achieve significantly higher than traditionally schooled students in two academic categories.

The findings of this applied research study add significant research-based knowledge to the focus institution regarding the academic achievement of homeschooled students. During a time when the focus institution is seeking to increase enrollment growth over the next five years, as stated in the institution's strategic plan, knowing that homeschooled students do as well academically (even more so) when compared to traditionally schooled students provides helpful direction in the institution's recruitment efforts. Moreover, homeschooled students are not only a valuable commodity to be pursued by the focus institution, but by other Catholic colleges as well.

Furthermore, given the fact that homeschooled students scored significantly higher than traditionally schooled students in standardized achievement tests (the ACT and SAT) and in overall college GPA, it seems reasonable to say that the homeschooling movement is preparing students for academic success in college, specifically a Catholic college. The results of the study certainly support the literature, which has given ample evidence to the homeschooling movement (e.g., Clemente, 2006; Cogan, 2010; Galloway, 1995; Gray, 1998; Holder, 2001; Jenkins, 1998; Jones & Gloeckner, 2004a, 2004b; Ray, 2004; Ray & Eagleson, 2008; Rudner, 1999; Sutton & Galloway, 2000). Since the results of homeschooling can be seen at the highest level in a college or university, there is no reason to doubt that the home is as effective as a traditional school in preparing students for academic success in higher education.

Recommendations for Future Research

This study added important information to the literature in regards to the academic achievement and value of homeschooled students attending a Catholic university. However, further research still needs to be done to convince those who doubt the homeschooling phenomenon as a legitimate educational alternative. Additional research can be done in the area of socialization. According to Saunders (2006), the academic preparation of homeschooled students is no longer in question, but the socialization question still is. More research studies need to be done to confirm that homeschooled students are not only academi-

cally prepared for the academic rigors of college but also able to easily navigate the complex social landscape of college. Determination of success in college for homeschooled students is contingent upon proving that these students are able to achieve both high levels of academic achievement and social integration.

Further research can also be done into the most effective pedagogy, or approach, to homeschooling. The practice of homeschooling often encompasses either some form of independent homeschooling or homeschooling via a more guided curriculum, such as attending a virtual school or some other home study program. Yet, such approaches can academically yield quite different results. More research needs to be done into which approach to homeschooling is most effective in producing students who are able to achieve high levels of academic success in college.

Finally, the focus institution should continue to seek out homeschooled students as an important part of its student body. In fact, it seems reasonable to say that Catholic colleges and universities with similar characteristics to the focus institution should do the same. More explicit recruitment efforts should be made at targeting this group of students, with the intention of maintaining or even increasing its current population percentage. At the same time, however, both public-schooled students and Catholic-schooled students did well academically in comparison to homeschooled students. These students should not be overlooked in the focus institution's recruitment effort or in other Catholic colleges and universities' recruitment efforts as well.

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