ACADEMIC ACHIEVEMENT VARIATIONS IN GEOGRAPHY: A PUBLIC - PAROCHIAL COMPARISON

Burton D. Nelson
Department of Geography
Central Michigan University
Mt. Pleasant, MI 48859

Robert H. Aron
Department of Geography
Central Michigan University
Mt. Pleasant, MI 48859

Roger L. Henrie
Department of Geography
Central Michigan University
Mt. Pleasant, MI 48859

Debra A. Poole
Department of Psychology
Central Michigan University
Mt. Pleasant, MI 48859

This paper assesses academic performance variations in Geography as a function of school type. It reveals that parochial school students, seventh through twelfth grades, possess superior knowledge of geography when compared to their public school counterparts. This is consistent across the four subfields of geography (physical, human, regional, map skills) that we surveyed. The difference is greater at the junior high school level and, while still significant, decreases at the high school level. While public and parochial school students differ significantly in a number of personal information variables, there is no evidence that these differences contribute to their differential knowledge of geography.

INTRODUCTION

There is considerable interest concerning academic achievement differences of public and parochial school students. As suggested by Hoffer et al. (1985), it has often been assumed by American educators and educational researchers that Catholic schools, and by inference also Protestant schools, were academically inferior. Reasons cited include class size, less formal teacher training, resource limitation, lower per-pupil expenditures, and religious narrowness resulting in restriction to thought and imagination. A landmark study, *High School and Beyond* (National Center for Educational Statistics 1982), began to seriously challenge this assumption. While several additional studies have found minimal differences (Alexander and Pallas 1985; Jencks 1985; Willms 1985), most have reported significant, although not always large, differences with religious school students outperforming their public school counterparts (Coleman et al. 1982; Hoffer et al 1985; Coleman and Hoffer 1987; Gamoran 1987; Sorensen 1987; and Bryk et al. 1993).

Two principal schools of thought have been proposed as possible explanations for the superior performance of students at religious schools (Williams and Carpenter 1990). One is that the quality of education is better due to an interworking of factors including stricter discipline, more rigorous curricula (Gamoran 1987 and Sorensen 1987), more homework, and higher standards (Haertel 1985). The other is that it is not what occurs at the schools that is the dominate factor, but rather

what the students bring to the schools. Thernstrom (1991) states that 'parochial schools can pick and choose among their applicants, and - more important - the schools themselves are chosen by parents. The students aren't assigned; their families apply and that application is a crucial sign of commitment to education. These families care.' Parochial school students tend to come from more affluent backgrounds (Haertel 1985) and, in addition, parents, teachers, and students work toward a more focused 'common good' (Bryk, et al. 1993 and Haertel 1985), with higher expectations (Armbrister 1991), within a more traditionally functional community (Coleman and Hoffer 1987).

Achievement tests by which students in parochial and public schools have been compared typically include the academic areas of mathematics, science, civics, vocabulary, reading, and writing. No study was found which compared levels of geographic knowledge. The purpose of this study is to assess performance levels of public and parochial junior and senior high school students within the field of geography.

METHODS

Questionnaire Construction

In order to investigate possible differences in performance, a questionnaire was developed to assess students' knowledge of geography. Since performance might be different for various subfields of geography, the questionnaire was subdivided into four categories: physical, human, regional, and map skills. A preliminary study was conducted to develop a reliable instrument. This was necessary to insure that a) questions would be an accurate measure of students' general knowledge within each category, and b) questions were set at an intermediate level of difficulty to maximize the possibility of detecting differences in performance between groups of students (i.e., junior verses senior high school, and public verses parochial schools).

For the preliminary study, questions within each category were administered to a test group of 105 college students enrolled in an introductory non-geography class. Because the questionnaire was rather lengthy, there was concern that students might perform better at the beginning and not as well at the end, resulting in an inaccurate measure of knowledge within the respective subfields. To alleviate this concern, the order of the four categories was varied using a Latin square procedure in which the order of sections is rotated. From these preliminary data, 60 items (15 for each category) were selected for the final questionnaire. Items were retained if not less than 45 percent nor more than 75 percent of the test group answered them correctly and if performance on an item correlated with performance on other items in the same category. The average difficulty of items in the four categories (expressed as percentage passing) was as follows: physical (63%), human (63%), regional (65%), and map skills (70%). Coefficient alphas for the four categories (a measure of intercorrelations among items in each category, or test reliability) ranged from .69 to .72 (full scale coefficient alpha = .90).

Procedure

The final questionnaire consisted of fifteen questions for each of the four categories plus a set of personal information questions. The questionnaire (using a Latin square rotation) was administered to 398 students, grades 7 through 12: 70 from a Baptist academy, 116 from a Catholic academy, and 212 from public schools. All of the schools are located in a small, university-oriented city in Michigan. Because of the relatively small sizes of the

parochial schools the questionnaire was administered to the entire junior and senior high student populations. In the much larger public schools a random sample was obtained by selecting required courses where all grade levels were relatively evenly represented. All of the schools surveyed have similar requirements and offerings with respect to geography-related courses.

RESULTS

There was no significant difference between the results of the Baptist and Catholic academies; thus, these two schools were combined for comparison with the public schools. Table 1 lists the mean scores by subfields. Scores represent the number correct out of a possible total of 15. Scores for the four sections of the questionnaire were analyzed using a 3-way analysis of variance to investigate differences in geographic subfields (physical, human, regional, and map skills), age (junior versus senior high school), and school type (public verses parochial). As expected, high school students collectively scored higher than their junior high counterparts, $F(1, 394) = 41.94$, $p < .001$. Table 1 shows that scores improved more from junior high to high school on the regional and human subfields than on physical and map skills $F(3,392) = 8.16$, $p < .001$. Figure 1 compares the overall scores of both public and parochial, junior and senior high groups. Interestingly , the performance of parochial junior high school students averaged slightly but not significantly higher than public high school students (Figure 1).

	Physical	Human	Regional	Map Skills
Junior High School				
Public	6.97	5.53	5.26	6.94
Parochial	9.11	7.82	7.99	9.73
High School				
Public	8.63	8.51	8.26	8.68
Parochial	9.8	9.06	8.96	9.63

Table 1: Mean Scores of Four Geography Subfields (out of a possible total of 15)

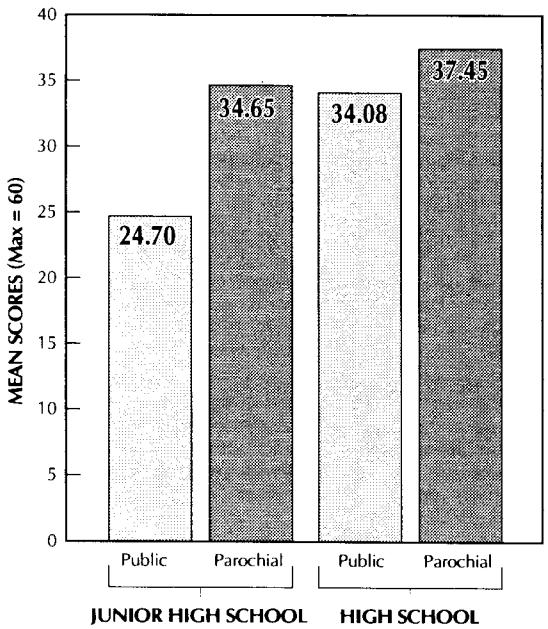

Figure 1: Mean Scores by School Type and Grade Level

The major finding of this analysis was a significant difference in performance as a function of school type. Parochial students performed better than public school students at both the junior high, $F(1, 394) = 57.89$, $p < .001$, and high school levels, $F(1, 394) = 6.25$, $p < .013$. The magnitude of difference

	Physical	Human	Regional	Map Skills
Physical	---			
Human	.59**	---		
Regional	.59**	.60**	---	
Map Skills	.52**	.53**	.59**	---
Total Score	.81**	.83**	.85**	.80**

** indicates intercorrelation at the .01 level of significance.

Table 2: Intercorrelation among Four Subfields

decreased from junior high to high school, with parochial school students in junior high scoring an average of 40% higher, whereas in high school the advantage was reduced to 10%.

The intercorrelations among the four subfields of the survey were analyzed (Table 2). Scores of the four sections of the survey were significantly intercorrelated, with correlation coefficients (r) ranging from .52 to .60. These correlations indicate that 27-36% of the variability in the scores on any one section were predictable from scores on another section. In other words, there is a relatively good consistency in student performance across all four sections, and this consistency existed for both public and parochial students.

The personal information questions were analyzed in an effort to explain why parochial school students performed better at both the junior high and high school levels. The first factor analyzed was gender. The junior high school samples included similar proportions of males (59% and 55% for the parochial and public schools respectively), whereas the public high school sample had a smaller proportion of males (35%) than did the parochial high school sample (54%). In order to investigate if gender differences explain the higher performance of students in parochial schools, analysis of variance was recomputed including gender as a factor to equally weight males and females in the computation of overall means. The pattern of results was unaffected by controlling for gender, both over and within each of the four subfields.

Other personal information responses dealing with family characteristics (parental education), experiences associated with family income (domestic and foreign travel), the number of geography classes taken, and individual interest differences (reading habits, television viewing, stamp and coin collecting, and consideration of a career in teaching) were then analyzed. Chi square tests were conducted at both the junior high and high school levels to compare public versus parochial students on these reported family and individual characteristics. Parochial school junior high students, compared to public school junior high students, reported more geography classes taken, that they were more likely to get knowledge about current events from newspapers and news magazines, and were more likely to collect stamps (all $p < .05$). In order to see if these factors help explain the differences in the performance of public and parochial students, correlational analyses were conducted between each of these characteristics and student performance levels on the questionnaire. The higher reported number of geography classes taken by the parochial junior high students appears to be a case of inaccurate reporting. At the junior high school level, all schools surveyed had identical geography requirements with no available electives. Interestingly, both groups of high school students reported taking a similar

number of geography classes. In any case, there was no significant correlation between the number of geography courses taken and performance.

At the high school level, parochial school students reported significantly lower maternal education levels, fewer countries visited, and a greater likelihood of getting information from television or radio and a lower likelihood of obtaining it from newspapers. Thus, contrary to Haertal (1985) cited earlier, the parochial high schoolers came from families with somewhat lower socioeconomic levels (as indicated by maternal education, family size, and travel experience). Correlations between each of these variables and scores on the questionnaire found no evidence that explains the superior performance of the parochial high school students (all $p > .05$).

In summary, although public and parochial school students differed on a number of family and individual interest variables, there was no evidence that these differences contributed to their differential knowledge of geography.

CONCLUSION

Parochial students performed better than their public school counterparts at both the junior and senior high levels. The magnitude of difference decreased from junior to senior high with junior high parochial students scoring an average of 40% higher whereas the high school advantage was reduced to 10%. Attempts to explain these observed differences involved analysis of personal information factors including gender, family characteristics such as parental education, travel experience, courses taken, reading and television viewing patterns and preferences, hobbies such as stamp or coin collecting, and the consideration of teaching as a possible career choice. There was no evidence that any of these factors contributed to student performance differences.

Perhaps the explanation of parochial student superior performance is indeed a function of one of the two schools of thought proposed by Williams and Carpenter (1990). One suggests that parochial schools offer a higher quality education. The other points out the possibility that students and families that choose parochial schools have a greater commitment to the importance of education. Perhaps explanation involves a combination of both.

The authors encourage additional research on this topic focusing on more diverse populations given the rather select nature of our sample (predominately Caucasian, small city).

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