DOCUMENT RESUME

ED 349 367 UD 028 859

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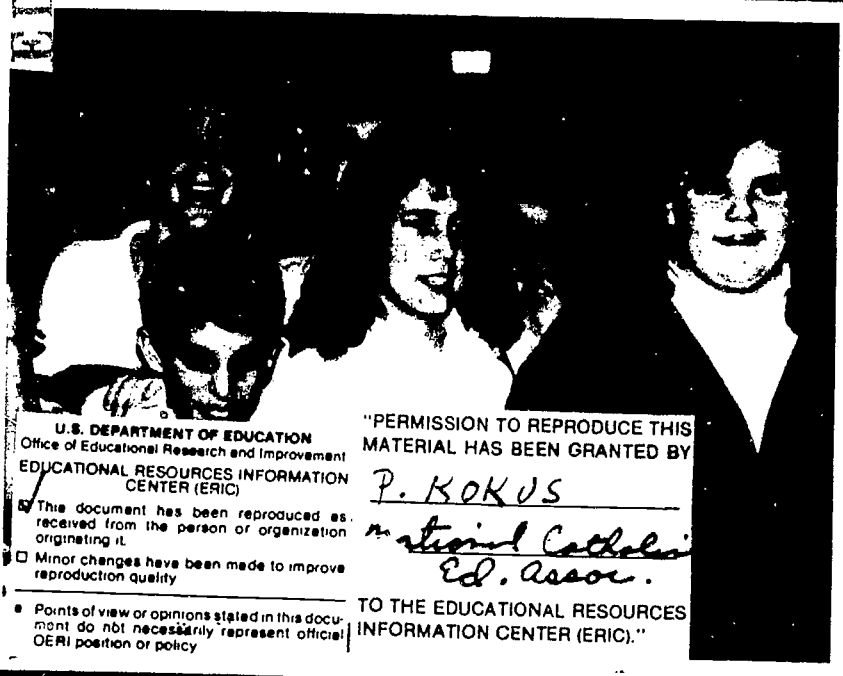
TITLE A Profile of Eighth Graders in Catholic Schools. Based on the National Educational Longitudinal Study of 1988.
INSTITUTION National Catholic Educational Association, Washington, D.C.
REPORT NO ISBN-1-55833-115-8
PUB DATE 92
NOTE 59p.
PUB TYPE Statistical Data (110) -- Information Analyses (070) -- Reports - Descriptive (141)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS Academic Achievement; *Catholic Schools; Comparative Analysis; Educational Experience; Equal Education; Excellence in Education; *Grade 8; Junior High Schools; *Junior High School Students; National Surveys; Parent Participation; *Profiles; Public Schools; School Demography; *Student Characteristics; Urban Schools
IDENTIFIERS National Education Longitudinal Study 1988

ABSTRACT

This report constructs a profile of the 225,000 eighth graders attending Catholic schools in the United States in 1988 and compares them to eighth graders attending public schools. The analysis focused on themes of excellence and equity. Study data were taken from the National Education Longitudinal Study of 1988. The study design incorporated a clustered, stratified national probability sample of approximately 1,000 schools (approximately 800 public schools and.200 private schools), with an average of 25 students in each school participating. Following an introduction, chapter 1, "Catholic Schools and Their Eighth Grade Students," provides an overview of Catholic schools with eighth grades; compares them to public schools, with particular attention to urban areas; and notes that with respect to achievement, urban Catholic students clearly outperform their public school counterparts. Chapter 2, "Experiences of Eighth Graders in Catholic Schools," focuses on subjects that students take, extracurricular activities, perceptions of teachers, and parent participation. Chapter 3, "Academic Performance of Eighth Graders in Catholic Schools," reports reading and mathematics test scores by behaviorally anchored proficiency scores, and reports history/social studies and science test scores by quartile. Included are 10 tables, 7 graphs, an appendix of methodological and technical notes, and 27 references. (JB)

A Profile of Eighth Graders in Catholic Schools



Based on the National Educational Longitudinal Study of 1988

A Profile of Eighth Graders in Catholic Schools

Based on the
National Educational
Longitudinal Study of 1988

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Prepared for the
National Catholic Educational Association

Cover photo by Mary Beth Brewer
ISBN No. 1-55833-115-8

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Introduction

For Catholic school students eighth grade is an important transition point. In most cases it is their last year attending an elementary school; it is a year when they begin to prepare themselves in earnest for the academic and social demands of high school. It is also a time when families decide whether the students should remain in Catholic school or change to a public high school. Although eighth graders may not be fully cognizant of the importance of this year, they are on the verge of making choices about the amount of effort they will put forth in eighth grade and the kind of high school they will choose. These choices will eventually influence their high school experience and will indirectly affect the options they will have later on regarding postsecondary education.

Based on a two-stage, stratified random sample of schools and students, this report constructs a profile of the 225,000 eighth graders attending Catholic schools in the United States in 1988 and compares them to eighth graders attending public schools. We have described the characteristics of eighth graders attending Catholic schools, including their family background, their experiences and attitudes, the involvement of their parents in their education, and finally their academic accomplishments.

As Lee and Stewart (1989) did in their analysis of the National Assessment of Educational Progress results, we have paid particular attention to the themes of excellence and equity. Excellence refers to striving for high standards of performance for both teachers and students. In this report excellence means high average performance on some criterion—such as course taking, school climate

measures, or academic performance. For instance, if one school's average test scores are higher than those of another school, the first school is thought to be closer to excellent.

Equity is generally viewed as the fair distribution of educational opportunities and resources to all students regardless of their cultural or economic background. For the purposes of this report it refers to the discrepancy between traditionally advantaged students and disadvantaged students with respect to facilities, learning opportunities, and academic performance. Schools where these discrepancies are larger are thought to be less equitable than schools where such differences are minimal.

The data are taken from the National Education Longitudinal Study of 1988 (NELS:88), which is a survey of 25,000 eighth graders that began in 1988. The study design incorporates a clustered, stratified national probability sample of approximately 1,000 schools (800 public schools and 200 private schools). An average of 25 students in each school participated. Questionnaires and cognitive tests were administered to each student in the NELS:88 sample. The student questionnaire covered school experiences, activities, attitudes, plans, selected background characteristics, and language proficiency.

Other groups of respondents provided additional types of information. Principals filled out a questionnaire about the school; two teachers of each student were asked to answer questions about the student, about themselves, and about their school; and one parent of each student was surveyed regarding family characteristics and student activities.

NELS:88 is sponsored by the National Center for Education Statistics, and the survey was conducted by the National Opinion Research Center (NORC) at the University of Chicago. The longitudinal design calls for returning to the same group of students at two year intervals. In 1990, the First Follow-Up survey was undertaken, and in

1992, when most of the students will be seniors, they will be surveyed for the Second Follow-Up. After leaving high school, sample members will continue to be surveyed.

The reader should note that, whenever differences between various groups of students are reported in the text, these differences have been verified as statistically significant; that is, they represent real differences that go beyond sampling error.

Chapter 1
Catholic Schools and Their Eighth Grade Students

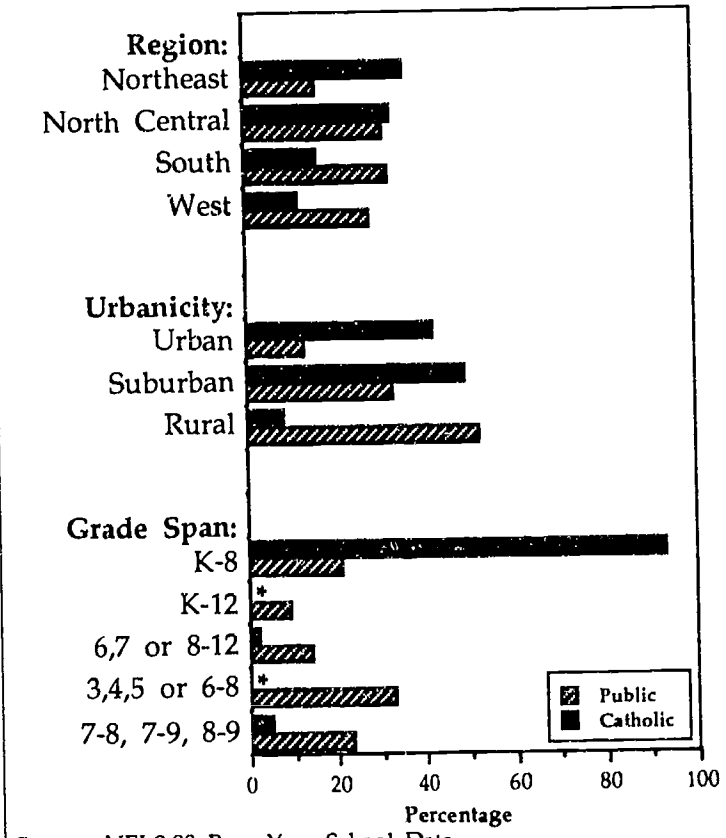
This chapter provides an overview of Catholic schools with eighth grades and compares them to public eighth grade schools. Information about school characteristics is based on a questionnaire which school principals and directors completed. Student data comes from the student and parent questionnaires. Particular attention is paid to comparisons between Catholic and public schools in urban areas.

Characteristics of Catholic Schools

Figure 1 reveals that Catholic education is more prevalent in the Northeast and North Central sections of the nation. Three fourths of all Catholic eighth grade schools are found in these two regions. About half as many Catholic schools are found in the South and West.

Furthermore, Catholic education is primarily an urban phenomenon. Over 90 percent of the Catholic schools with eighth grades are located in central cities or in suburbs and smaller cities that are within the Census Bureau's Metropolitan Statistical Area (MSA) classification. Only a small proportion are located in what the Census Bureau designates as rural areas. In contrast, over 50 percent of public schools are classified as rural. The Census Bureau's definition of rural is any area that is "not in an MSA"; consequently rural includes medium sized cities and small towns that are not part of metropolitan areas as well as rural communities. Hence, few Catholic schools are found outside of metropolitan areas, whereas over half the public

Figure 1—Characteristics of Catholic and Public Eighth Grade Schools



Source: NELS:88 Base Year School Data
*No Catholic schools had this grade span in this study.

schools are located in outlying suburbs, smaller cities and towns and rural areas. It is important to note that the classification of schools as urban, suburban, and rural differs in this report from that of the National Catholic Educational Association (NCEA) (Bredeweig, 1988). The main difference is that NCEA reports fewer suburban and more rural schools than does NELS:88. The NCEA figures are based on self reports by school leaders, who perceive

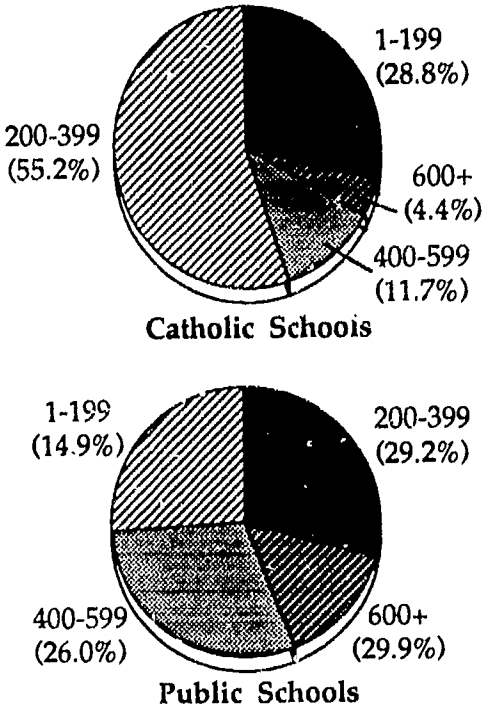
their communities as rural even though they would not be strictly classified as such by the U.S. Census. The NELS:88 definition is based on the U.S. Census definitions.

With respect to school organization, the vast majority of eighth graders in Catholic schools attend schools with kindergarten through eighth grade. This differs from public schools, where most eighth graders attend schools with middle grades, such as six to eight, seven and eight, or seven to nine. The fact that Catholic eighth graders attend schools which have the lower grades in them suggests that they may have qualitatively different experiences from public school eighth graders with respect to curriculum, composition of the student body, disciplinary climate, extra curricular activities, and school ethos. In Catholic schools the eighth graders are at the peak of their elementary school career. Many of them will have attended Catholic schools exclusively during their elementary career. Thus they are likely to be thoroughly imbued with the norms and values of the school culture. Middle and junior high school students in the public sector, on the other hand, may not be the oldest students in the school. In addition, since their tenure is shorter in a middle or junior high school, they may not be as strongly inculcated with school norms and values.

As Figure 2 illustrates, attending a Catholic school generally means attending a small school. Almost one third of Catholic schools have fewer than 200 students, and 85 percent have fewer than 400. Among public schools the most common sizes are 200-399, and 400-599 students. Also, over 15 percent of the public schools have 800 or more students, compared to only one percent of Catholic schools. Under these circumstances, students in Catholic schools are likely to feel more a part of their schools than are public school students.

From these data it is apparent that Catholic and public schools differ in general from one another with respect to geographic region, size and type of community in which they are located, and the age composition of students

Figure 2—Enrollment Sizes of Catholic and Public Schools



Source: NELS:88 Base Year School Data

attending school.

Characteristics of Eighth Graders in Catholic Schools

Table 1 summarizes the characteristics of the students attending public and Catholic schools. Information contained in this table was reported either by the student or one of his or her parents. As expected, in both public and Catholic schools there are about the same number of males and females. With respect to race, the two sectors are fairly similar. Where small differences exist, they are not statistically significant. It is important to note that these are aggregate statistics for all schools in each sector.

Table 1 — Percentage of Eighth Graders in Catholic and Public Schools by Selected Background Characteristics

	Total	Catholic	Public
Sex			
Male	50.1	48.8	50.2
Female	49.9	51.2	49.8
Race/ethnicity			
Asian	3.5	4.1	3.3
Hispanic	10.4	10.8	10.6
African American	13.3	9.9	14.0
White	71.6	74.5	70.7
Native American	1.3	0.6	1.3
Socioeconomic status			
Lowest Quartile	24.9	9.9	27.2
2nd Quartile	25.1	24.2	25.8
3rd Quartile	25.1	29.9	24.8
Highest Quartile	24.9	36.1	22.2
Parent education			
LT High School	10.3	2.8	11.4
HS Graduate	20.6	16.8	21.5
Some College	41.5	41.4	42.2
College Graduate	14.0	21.2	12.8
Graduate Degree	12.0	15.3	10.6
Don't know	1.5	2.5	1.4
Family composition			
Mother & father	63.6	75.1	61.8
Mother & male guardian	11.6	6.1	12.3
Father & female guardian	2.6	1.1	2.8
Mother only	16.5	13.9	17.0
Father only	2.6	2.2	2.7
Other relative	3.2	1.5	3.4
Test composite			
Lowest Quartile	25.1	13.9	26.9
2nd Quartile	24.4	22.3	25.0
3rd Quartile	25.7	31.6	25.1
Highest Quartile	24.7	32.2	23.0

SOURCE: U.S. Department of Education, NELS:88 Base Year Student Survey

Comparisons of individual schools would no doubt reveal greater differences in racial composition.

Socioeconomic level (SES) was determined on the basis of father's education, mother's education, father's occupation, mother's occupation, and family income. On their questionnaire, parents indicated the amount of education they had received, the type of job each had, including being a homemaker, and the family's total income. Responses were combined into a socioeconomic index.

Significant differences exist between Catholic and public school students with respect to SES. Catholic schools are much less likely than are public schools to have students from the lowest SES quartile and more likely to have students from the top two quartiles. Only 47 percent of public school students were classified in the top two quartiles, whereas over 60 percent of the Catholic students fell into this classification.

Comparisons of parental education are consistent with SES; Catholic school students are more likely to come from homes where parents have higher levels of education. An estimated 14 percent more Catholic students than public school students come from homes where the parents have a college education or advanced degree. At the opposite end of the education scale about 8 percent more students in public schools than Catholic schools come from homes where the parents have less than a high school education. Prior research has established that better educated parents generally provide educational advantages to their offspring, including higher expectations, an environment that supports education, and greater access to educational resources (Alexander and McDill, 1976; Coleman, 1966; Coleman, Hoffer and Kilgore, 1982; Coleman, 1987; Heyns, 1974; Jencks, et al, 1972; Natriello, McDill, and Pallas, 1990; and Rosenbaum, 1975). Although differences in parental education among parents of Catholic and public school students are not dramatic, they do suggest that Catholic school students come to school with somewhat greater educational advantages.

In terms of the family composition of these eighth graders, a higher percentage of those from Catholic schools had both parents present in the household, whereas a higher percentage of public school students had only their mother in the household.

Catholic school students were also much less likely to report that they had ever been retained in one or more grades. Although not shown in the table, ten percent indicated they had repeated one or more grades some time during their schooling; this compares to 18 percent for public school students (Hafner, Ingels, Schneider, and Stevenson, 1990).

Students in the two sectors were also compared with respect to their test scores. A test composite score was created to represent the student's score on reading and mathematics. In general, Catholic students outperformed their public school counterparts. Only 14 percent of the Catholic students ranked in the lowest quartile, compared to 27 percent of public school students. At the upper end of the score distribution 19 percent more Catholic school students than public school students scored in the top quartile.

As we have seen, Catholic schools students come from more advantaged homes, where both parents are more likely to be present, and where the parents are more educated and have higher incomes. Whether the Catholic advantage can be attributed to more effective schools or to differences in the populations the respective sectors serve is an open question. Descriptive analyses in this report are not sufficient to answer that question. Prior research suggests, however, that Catholic schools bring about greater growth for average students and students who are traditionally disadvantaged than do public schools (Coleman, Hoffer, and Kilgore, 1982; Coleman and Hoffer, 1987; Lee and Bryk, 1989). With respect to this study, however, data gathered over two or more points in time are needed to disentangle student characteristics from school characteristics to understand the relationship be-

tween Catholic schooling and the stronger performance of Catholic students.

Urban Schools

Over the last 25 years, the racial and economic composition of the nation's cities have changed dramatically as more advantaged families have moved to the suburbs. This population shift has affected Catholic schools in cities and the clientele they serve. Increasingly, Catholic schools in urban centers have begun to serve poor and minority students (Brigham, 1991). Table 2 summarizes the characteristics of both Catholic and public school eighth graders in schools categorized as urban, i.e., schools in central cities. Although Catholic education has made important inroads in serving minority and poor children in urban schools, Table 2 demonstrates that, for the sector as a whole, most students in urban Catholic schools continue to be white, middle class students from intact families. For example, in urban public schools, whites are in the minority, representing only 43 percent of the students. In contrast, in Catholic urban schools, 70 percent of students are white. Likewise, Hispanics account for 12 percent of the Catholic student body versus 19 percent of the public school students, and only 13 percent Catholic students are African-American compared to 32 percent of the public school students. It should be recalled, however, that these figures are for the sector as a whole; individual schools will vary much more in the proportion of minority students they serve.

With respect to SES, Catholic schools are serving a small proportion of poor students; an estimated 12 percent are from the lowest quartile; most students—about 64 percent—are in the top half of the SES distribution. In public schools the proportion of students from the lowest quartile is 34 percent, and only 40 percent are in the top half of SES.

Table 2 also shows that Catholic school students are much more likely than are public school students to be

Table 2 — Percentage of Eighth Graders in Urban Catholic and Public Schools by Selected Background Characteristics

	Total Urban	Catholic	Public
Sex			
Male	50.2	48.8	50.4
Female	49.8	51.2	49.6
Race/ethnicity			
Asian	4.8	4.3	4.8
Hispanic	16.8	11.5	19.0
Black	26.9	13.4	31.6
White	50.0	70.1	42.9
Native American	1.5	0.7	1.7
Socioeconomic status			
Lowest Quartile	28.0	11.5	33.5
2nd Quartile	24.0	24.1	25.6
3rd Quartile	24.2	30.3	23.3
Highest Quartile	23.8	34.1	17.6
Parent education			
LT High School	12.3	2.7	5.1
HS Graduate	18.9	17.4	20.4
Some College	41.4	42.8	42.
College Graduate	14.7	22.6	12.2
Graduate Degree	6.9	7.1	5.6
Don't know	7.1	9.1	5.2
Family composition			
Mother & father	56.5	72.6	51.3
Mother & male guardian	11.7	6.8	13.2
Father & female guardian	2.2	1.0	2.4
Mother only	22.9	15.4	25.3
Father only	2.6	2.5	2.7
Other relative	4.2	1.8	5.0
Test composite			
Lowest Quartile	31.9	17.1	37.0
2nd Quartile	24.1	22.5	25.3
3rd Quartile	22.9	31.2	21.1
Highest Quartile	21.2	29.2	16.6

SOURCE: U.S. Department of Education, NELS:88 Base Year Student Survey

part of intact families, where both parents are present. Nevertheless, one quarter of the Catholic school students have experienced some type of family disruption, which has led them to live with a step parent or only one parent. About 18 percent are living with a single parent; this compares to 30 percent of the public school students.

With respect to achievement, urban Catholic students clearly outperform their public school counterparts. The proportion of Catholic students scoring in the lowest test quartile is half the proportion of public school students scoring that low. Over 60 percent of Catholic students scored in the upper half of the test score distribution, whereas only 37 percent of the public school students were in the upper half. Again, considering the relative social and economic advantages of urban Catholic students compared to those of public school students, this is not surprising. More complex analyses of longitudinal data are needed to control for differences in students' family backgrounds, prior educational experiences, and the effects of the eighth grade year to determine how Catholic education in and of itself contributes to the better performance of Catholic students.

Chapter 2
Experiences of Eighth Graders in Catholic Schools

This chapter will primarily focus on students' experiences in school—the subjects they take, the extra curricular activities they join, how they perceive their teachers, and the degree to which their parents participate in their education.

Course Taking

Students were asked to indicate whether they were in regular or remedial English classes; whether they studied algebra or advanced math, regular math, or remedial math; and whether they took science, including a laboratory (see Appendix for an explanation of how course taking was determined). Table 3 highlights the courses students take.

The vast majority of students in both Catholic and public schools study the core academic subjects: English, mathematics, science, and history or social studies. Looking within subjects, however, differences begin to emerge. Catholic school students are about twice as likely as public school students to take remedial English and mathematics courses. Also, somewhat higher percentages of Catholic school students take algebra and regular math. Only a minority of students in each sector have a laboratory experience with their science class, and the proportion is

Table 3 — Percentage of Eighth Graders in Catholic and Public Schools Taking Various Types of Courses

	Total	Catholic	Public
English	95.5	96.7	95.3
Regular English	93.0	94.1	92.7
Remedial English	12.6	24.4	11.5
Mathematics	96.8	96.8	96.7
Algebra	37.1	40.6	35.8
Regular Mathematics	69.1	76.2	69.1
Remedial Mathematics	7.9	13.9	7.5
Science	89.4	95.2	89.0
Science w Lab	9.0	22.0	29.3
Science w/out Lab	66.5	75.5	65.9
Foreign Language	24.0	17.2	23.6
History/Soc Studies	95.4	97.6	95.1
Computer Education	34.8	59.2	32.4
Religion	17.4	92.5	8.6
Art/music	65.6	88.3	63.4
Drama/speech	10.2	9.0	9.8
Home economics	31.1	5.3	34.3
Shop	31.8	3.6	35.4
Sex education	18.0	17.2	18.2

NOTE: Students could indicate more than one course in a category; consequently, for English, mathematics, and science, the percentages do not sum to 100.

SOURCE: U.S. Department of Education, NELS:88 Base Year Student Survey

smaller in Catholic schools. The same is true for foreign language; relatively few students in eighth grade study a foreign language, and the proportion is even smaller in Catholic schools.

Compared to public school students, the percentage of Catholic school students studying history and social studies is slightly higher, and substantially higher percentages of Catholic school eighth graders study art and music and religion. Also 59 percent of the Catholic school eighth

graders indicated they took a computer education class; only 32 percent of the public school eighth graders reported such instruction. Eighth graders in Catholic schools are much less likely than public school eighth graders to report taking home economics and shop.

These differences are notable because they suggest that students in Catholic schools receive somewhat different opportunities to learn than do public school students. Past research has shown that instructional time and the amount of coursework are positively related to achievement (Carroll, 1963; Sebring, 1987; Walberg, 1984). Hence differences in course exposure are likely to lead to differences in students' achievement levels.

Seventeen to 18 percent of the students in both sectors indicated they had instruction in sex education. Considering changing norms regarding sexual behavior and the tendency of young people to become sexually active at earlier ages, both the public and Catholic schools appear to be reaching only a small portion of students. However, students could be receiving such instruction in earlier grades or as part of their science, physical education or religious studies classes.

Extracurricular Activities

Classroom based learning is the central activity for eighth graders in their school. Yet another important aspect of school life is extracurricular activities. With most parents working, after-school activities are increasingly important sources of positive experiences for middle grade students. The NELS:88 questionnaire asked students to indicate the activities in which they participated, and the results are shown in Table 4.

Among Catholic school students the most popular activity is varsity sports, where student teams compete with teams from other schools. Sixty-one percent of the students reported participation in these events. The next most popular activity is intramural sports, with 46 percent participation. This was followed by science fairs and the

Table 4 — Percentage of Eighth Graders in Catholic and Public Schools who Participate in Various School- based Extracurricular Activities

	Total	Catholic	Public
Extracurricular Activities:			
Varsity sports	48.0	60.8	46.1
Intramural sports	42.5	46.2	41.5
Band/orchestra	23.0	9.2	24.3
Chorus	24.1	22.3	23.7
Dance/drama	31.3	30.1	31.6
Science fairs	28.2	39.1	26.5
Newspaper/yearbook	21.4	39.8	19.5
Academic clubs	15.8	12.4	16.0
Foreign language club	5.9	3.5	6.2
Debate/speech	5.5	6.5	5.4
Honors society	13.3	12.3	13.4
Student Council	12.6	15.6	12.3
Religous Organization	14.8	20.4	13.7

SOURCE: U.S. Deparment of Education, NELS:88 Base Year Student Survey

newspaper or yearbook. Almost a third of the Catholic students participate in dance or drama, and about a fifth join chorus and religious organizations. Roughly ten to 15 percent of the students belong to band or orchestra, student council, honor society, and academic clubs (history, science, computer, etc.). Other activities drew fewer students.

Overall, Catholic school students are more likely to participate in extracurricular activities than are public school students. A much higher percentage of Catholic school eighth graders take part in intramural sports, science fairs, the newspaper or yearbook and in religious organizations. Catholic students are less likely to participate in band or orchestra than are public school students.

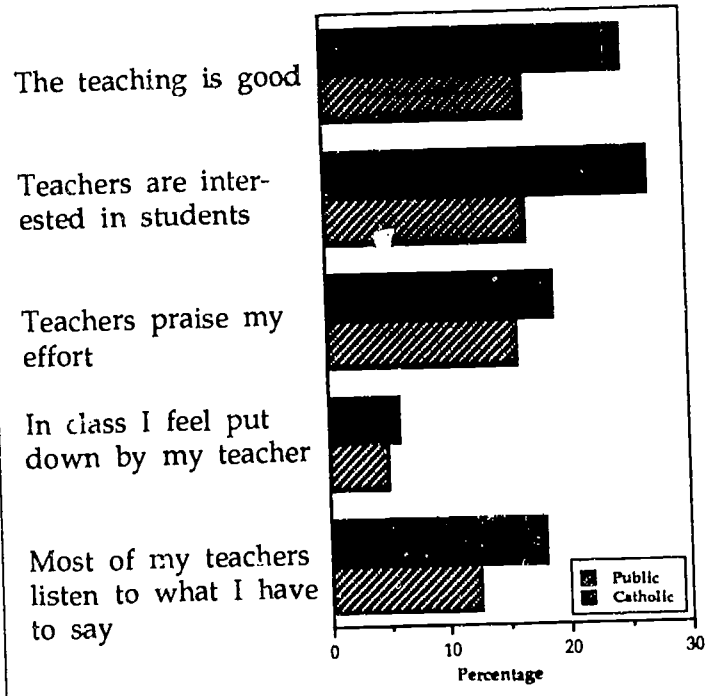
The greater participation of Catholic school students may be partially explained by the smaller size of Catholic schools, thus providing more opportunities for students to participate in activities. Whatever the reason, the difference between Catholic and public schools in extracurricular activities is significant. It has long been recognized that students who are more involved generally perform better academically than less involved students. Consequently, schools that succeed in involving students in sports, clubs, and other activities are likely to promote greater academic success among their students.

Attitudes Towards Teachers

Figure 3 summarizes eighth graders' attitudes towards their teachers. In both public and Catholic schools students hold quite positive feelings about their teachers. The vast majority agree or agree strongly with the following statements: the teaching is good; teachers are interested in students; teachers praise my efforts; and most of my teachers listen to what I have to say. Less than a quarter of the students in both sectors said their teachers "put them down".

Closer examination of the responses reveal that Catholic school eighth graders are somewhat more positive about their teachers than are public school eighth graders. In four out of five of these items, larger percentages of Catholic school students than public school students indicated they "strongly agree" with the positive statements about their teachers. Hence, while students generally perceive their teachers as competent and concerned about students, Catholic school students experience these feelings somewhat more intensely. The importance of these sector differences should not be underestimated. Prior research has clearly established that students take an active part in learning when they sense respect, interest, and support on the part of their teachers (Firestone and Rosenblum, and Wilson and Corcoran cited in Fullan and Stiegelbauer, 1990). Thus, the relationship between stu-

Figure 3—Percentage of eighth graders who **strongly** *agree with various statements about their teachers*



Source: NELS:88 Base Year Student Data

dents and teachers in Catholic schools appears to be somewhat more likely to foster student engagement than does the comparable relationship in public schools.

Differences Among Catholic Schools

While it was pointed out in Chapter 1 that Catholic schools are much more likely than public schools to contain students in the upper two socioeconomic status (SES) quartiles, there is still a considerable degree of diversity to be found in the population of Catholic school students. The socioeconomic makeup of a school's student

body is likely to affect the amount of resources a school can commit to the education of that student body.

With this in mind, we compared students' experiences in Catholic schools serving less well off students versus students' experiences in Catholic schools serving more affluent families. Essentially schools were divided into three groups: schools where the average SES of the students was in the lowest third of the national distribution; schools where the mean SES was in the middle third, and finally schools where the average SES was in the top third of the nation. Table 5 summarizes the results.

This analysis points to four conclusions. First, students in more affluent schools generally take more courses than students in poorer schools. While 45 percent of the students from high SES schools reported they were taking algebra, only 27 percent of the low SES students reported the same. Similarly, 20 percent more students in high SES schools reported taking a science class with a laboratory than did students in low SES schools.

Secondly, although there are exceptions, the general trend is that participation in extra curricular activities increases with socioeconomic level. Compared to those from low SES schools, higher percentages of students from high SES schools took part in varsity sports, intramural sports, band and orchestra, and science fairs. While nearly two-thirds of all students from high SES schools participated in varsity sports, only 43 percent of those from low SES did the same. Similarly, almost half of those from high SES schools reported participating in intramural sports while only 39 percent of those from low SES schools said they participated in this activity. (It appears from Table 5 that students from low SES schools might be more likely to participate in chorus than those from high SES schools, but differences are not statistically significant.)

Third, there is a tendency of students in poorer schools to appreciate their teachers a bit more and to rate the school climate more positively. Many things contribute to a school's climate; the quality of student-teacher inter-

Table 5 — Percentage of Eighth Graders in Low, Medium, and High SES Catholic Schools by Selected Characteristics

	Mean School SES			
	Total Catholic	Low	Medium	High
Course taking				
Algebra	40.0	27.3	35.4	45.1
Science w/lab	22.3	7.4	19.2	26.7
Foreign language	16.2	12.8	15.2	17.4
Extracurricular activities				
Varsity sports	60.9	42.8	57.5	66.1
Intramural sports	46.3	39.0	44.0	49.0
Band/orchestra	9.3	4.0	8.7	10.5
Chorus	22.1	27.5	21.3	21.9
Dance/drama	30.4	35.1	24.0	34.2
Science fairs	39.4	23.7	35.0	44.9
Newspaper/yearbook	39.7	35.4	36.4	42.8
School climate (percent who agree or strongly agree)				
Students and teachers get along	75.4	79.8	73.4	76.1
There is real school spirit	70.5	77.4	65.1	73.3
Discipline is fair	69.4	71.8	69.2	69.1
Teaching is good	82.9	91.5	80.1	83.5
Teachers are interested in students	83.0	92.8	81.3	82.8
Teachers praise me	66.9	77.4	7.1	65.2
Teachers really listen to me	73.3	73.3	3.5	73.2
Test composite				
Lowest quartile	14.0	26.3	17.4	.8
Second quartile	22.5	33.5	25.3	8.9
Third quartile	31.8	27.7	31.3	2.7
Highest quartile	31.7	12.6	26.1	8.6

SOURCE: U.S. Department of Education, NELS:88 Base Year Student Survey

actions, the nature of academic expectations, the disciplinary system, and the physical surroundings. Research has shown that a school environment in which students feel safe, respected, and supported is likely to be more effective in producing academic gains among students.

On the school climate measures, students in Catholic schools appear to be very satisfied with their school experience. Very high percentages of students from all three types of Catholic schools expressed agreement with the seven statements regarding teachers and school climate. Students were particularly positive about the teaching being good in their school and about the interest teachers take in students.

It is significant that students from low SES Catholic schools appear to have higher opinions of their teachers than do students from medium and high SES schools. For example, students from low SES schools were much more likely than those from medium and high SES schools to agree or strongly agree that the teaching at their school was good, that teachers at their school are interested in students, and that their teachers praised them.

Despite how they feel about their teachers, however, students in the low SES schools do not perform as well. The fourth point is that, as so much research has shown, social class is clearly related to learning. There is a strong tendency of test scores to increase in relation to economic well being. We suspect that it is not just the home background at work, but the home background as it influences the resources of the school. Schools with more affluent students appear to be able to offer more learning opportunities.

Parent Involvement

When parents were asked about how often they talk to their child about school experiences, the overwhelming majority indicated "regularly", with a somewhat higher percentage of Catholic school parents indicating that

Table 6 — Percentage of Parents of Eighth Graders in Catholic and Public Schools Reporting Different Kinds of Involvement with their Childrens' Education

	Total	Catholic	Public
How often parent talks to child about school experiences			
Not at all	0.7	0.2	0.7
Rarely	2.2	1.4	2.4
Occasionally	17.9	13.1	18.6
Regularly	79.3	85.3	78.3
How often parent talks to child about plans for high school			
Not at all	2.1	0.3	2.3
Rarely	7.3	2.7	7.7
Occasionally	43.5	32.4	44.5
Regularly	47.2	64.6	45.5
Number of times parent contacted school about child's academic performance			
None	47.6	41.2	48.5
1-2 times	35.6	42.2	34.8
3-4 times	10.9	11.4	10.7
More than 4 times	6.0	5.1	6.0
How often parent helps child with homework			
Seldom or never	29.5	25.7	29.9
1-2 times/month	27.7	27.6	27.6
1-2 times/week	32.1	34.7	31.9
Almost every day	10.7	12.0	10.6

SOURCE: U.S. Department of Education, NELS:88 Base Year Parent Survey

response (see Table 6). Not surprisingly, parents reported talking with their child somewhat less often regarding the student's plans for high school; however, Catholic school parents were 20 percent more likely to speak often with their children about plans for high school than were public school parents.

For the most part, parents do not contact the school about their child's academic performance, but Catholic school parents are somewhat more likely to contact the school about their child's academic performance than are public school parents. With respect to homework, there is wide variation among parents in how often they help their child with homework, and there are virtually no differences between the two sectors in the frequency of parental help.

Chapter 3
Academic Performance of Eighth Graders in Catholic Schools

To evaluate academic performance, students were administered a cognitive test that was specifically designed for NELS:88 by the Education Testing Service. The test, which required about one and one-half hours, was completed by the eighth grade students during survey sessions held at their schools.

For purposes of this report, reading and math test scores are reported by behaviorally-anchored proficiency scores. Proficiency scores relate meaningful behaviors to various points on a total score scale. The NELS:88 reading test has two levels of proficiency, while the mathematics test has three levels. Skills in reading and mathematics are thought to follow a "building-block" pattern. That is, it is assumed that skills needed to master the basic level are necessary to achieve proficiency at a higher level (Hafner, Ingels, Schneider, and Stevenson, 1990). History/social studies and science test scores are reported by quartile. Quartiles simply split the distribution of student test scores into four equal sized groups.

Reading

Table 7 shows the percentage of students in each sector

Table 7—Percentage of Eighth Graders in Catholic and Public Schools who are Proficient at each Reading Proficiency Level by Selected Background Characteristics

	Catholic			Public		
	Below basic	Basic	Adv.	Below Basic	Basic	Adv.
Total	8.5	47.4	44.0	14.5	53.5	32.1
Sex						
Male	10.6	46.8	42.6	16.3	53.3	30.4
Female	6.6	48.0	45.4	12.7	53.6	33.7
Race/ethnicity						
Asian	7.7	44.1	48.2	15.4	48.4	36.2
Hispanic	10.4	56.4	33.3	22.1	58.9	19.1
African American	13.6	57.6	28.8	24.2	58.4	17.5
White	7.4	44.8	47.8	11.0	52.0	37.0
Native American	low n	low n	low n	30.2	54.5	15.3
Socioeconomic status						
Lowest Quartile	11.2	59.7	29.2	23.0	59.9	17.1
Second Quartile	10.4	53.9	35.7	15.2	57.2	27.6
Third Quartile	11.1	44.2	44.7	12.2	53.0	34.8
Highest Quartile	4.6	42.6	52.9	6.2	42.2	51.7

SOURCE: U.S. Department of Education, NELS:88 Base Year Student Survey

and across the various categories who scored below the basic level, at basic, or at the advanced level in reading. Among Catholic school students, less than 10 percent were below basic, and the rest divided fairly evenly between basic and advanced. This is somewhat better performance than public school students—over half were basic readers, but only a third were advanced readers. Fifteen percent were below basic.

Examining the performance of students of different racial and ethnic backgrounds provides some indication

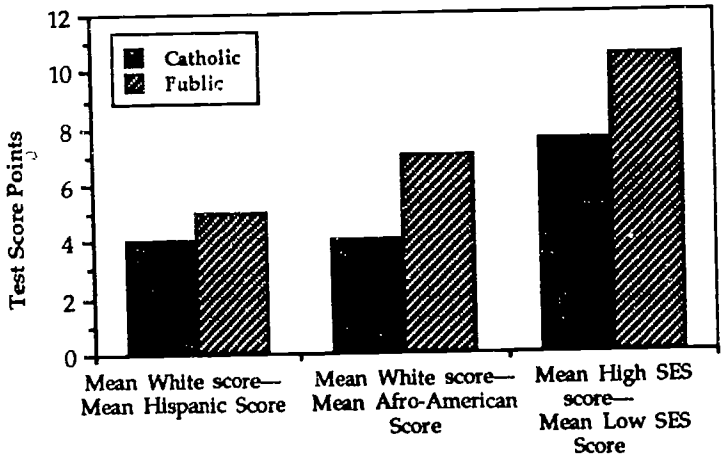
of how well each group does in each sector. Hispanic and African American students are much less likely to be reading at a level below basic and more likely to be reading at the advanced level in Catholic schools than they are in the public schools. For example, among Hispanics students, 10 percent read below the basic level in Catholic schools, compared to 22 percent in public schools; about the same percentage in each sector reads at the basic level; and 33 percent of Hispanics in Catholic schools are advanced readers, compared to only 19 percent in public schools. In both sectors Asian students performed similarly to white students.

Another way to examine reading achievement is to compare the difference in the mean reading proficiency scores of white and minority students and high SES and low SES students in each sector. Figure 4 contains three such comparisons—the difference between white and Hispanic students' reading scores, the difference between white and African American students' reading scores, and the difference between high SES and low SES students' reading scores. The figure illustrates that the gaps in reading proficiency are considerably smaller in Catholic schools. That is, achievement is more equitably distributed across the student body in Catholic schools than in public schools.

The same pattern can be found among students of different economic backgrounds. The difference between the average reading scores of high and low SES students in public schools is 3 points higher than the corresponding difference for Catholic school students.

Ideally, academic performance of disadvantaged students should be the same as that of advantaged students. In Catholic schools there is not complete equity in this theoretical sense; however, we do see that the gaps are smaller between minority and majority students and between disadvantaged and advantaged students. Based primarily on High School and Beyond data, Coleman and his colleagues have argued that Catholic schools appear

Figure 4—Differences in Reading Achievement Among Student Subgroups in Catholic and Public Schools



Source: NELS:88 Base Year Student Data

to create a "common school experience", where achievement is more equitably distributed across students of different backgrounds than it is in schools in the public sector (Coleman, Hoffer, and Kilgore, 1982). In their examination of National Assessment data, Lee and Stewart (1989) also found evidence of the "common school effect" for Catholic schools. It appears that we are again seeing evidence of the "common school effect" in NELS:88.

Mathematics

For mathematics there are three levels of proficiency. The basic level requires the ability to successfully carry out simple arithmetical operations on whole numbers. Intermediate questions require the same basic competencies, plus the addition of mastery of simple operations with decimals, fractions, and roots. The advanced level incorporates the ability to successfully master simple

problem solving tasks. This level goes beyond the rote application of rules and requires conceptual understanding and/or the development of a problem solution strategy. Solutions may require some experience with geometry, algebra, or logic.

Table 8 shows that large percentages of eighth graders in both Catholic and public schools perform at only the basic level, and smaller percentages perform at the intermediate and advanced levels. Among those with advanced math proficiency, there are no significant differences by school type; Catholic and public school students

Table 8 — Percentage of Eighth Graders in Catholic and Public Schools who are Proficient at each Mathematics Proficiency Level by Selected Background Characteristics

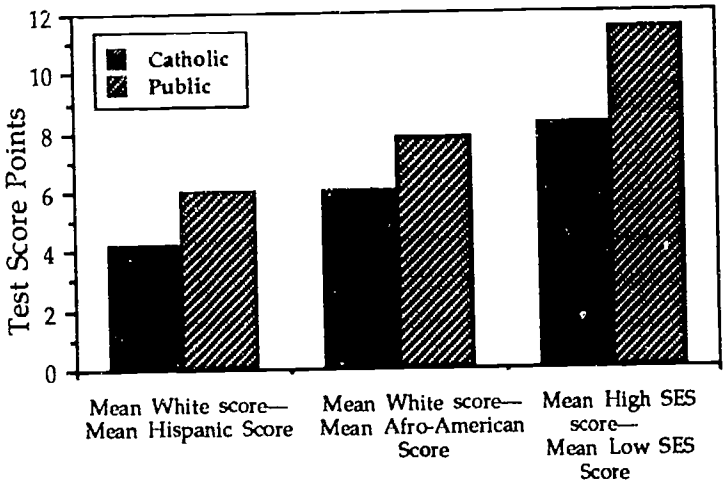
	Catholic				Public			
	Below Basic	Basic	Inter-mediate	Adv.	Below Basic	Basic	Inter-mediate	Adv.
Total	13.0	38.3	29.5	19.3	19.8	40.9	21.5	17.8
Sex								
Male	14.8	35.3	28.9	21.0	21.5	38.0	22.2	18.4
Female	11.2	41.1	30.1	17.6	18.2	43.9	20.8	17.1
Race/ethnicity								
Asian	10.0	26.1	24.7	39.2	13.9	32.3	20.7	3.1
Hispanic	18.3	41.8	26.0	13.9	28.7	47.4	16.1	7.9
African American	16.9	47.3	29.8	6.0	29.8	49.5	15.8	4.9
White	11.5	37.1	30.4	21.0	16.2	38.6	23.8	21.4
Native American	low n	low n	low n	low n	33.0	49.8	12.9	4.3
Socioeconomic status								
Lowest Quartile	22.0	46.6	26.1	5.3	30.0	48.8	15.8	5.4
Second Quartile	14.5	43.8	30.1	11.6	22.2	44.5	21.9	11.4
Third Quartile	11.5	42.0	29.1	17.3	15.5	41.6	23.5	19.5
Highest Quartile	10.5	29.0	30.4	30.1	9.7	26.6	25.6	38.0

SOURCE: U.S. Deparment of Education, NELS:88 Student Survey

are about equally likely to reach the advanced level of math proficiency. However, the percentage of Catholic school eighth graders with intermediate math proficiency is significantly higher than the percentage of public school eighth graders. Table 8 also indicates that substantially higher percentages of public school students had math proficiency scores that fell below the basic level. This difference between the two sectors was found among all gender, race, and SES categories. One exception to this pattern is that relatively more high SES public school students than high SES Catholic school students perform at the advanced level. This pattern also emerged for science.

Much like the reading results, Table 8 illustrates that racial minority students in Catholic schools exhibit higher levels of math proficiency than their public school counterparts. For instance, in Catholic schools 26 percent of

Figure 5—Differences in Math Achievement Among Student Subgroups in Catholic and Public Schools



Source: NELS:88 Base Year Student Data

the Hispanics and 29 percent of the African Americans have intermediate level math skills. By contrast, among public school students, only 16 percent of both racial minority groups possess intermediate math skills. Figure 5 indicates that the math achievement gap between racial minorities and whites is smaller in Catholic schools.

Results by SES were also similar to the reading results, in that the gap between the pe formance of low SES students and high SES students is smaller for Catholic schools than it is for public schools.

History/Social Studies

Table 9 shows the test results for history/social studies. In this table the percentage of students scoring in each test quartile is shown. The results indicated, overall, that Catholic school eighth graders outperformed their public school counterparts. Comparing students from the two types of schools, in all but one subcategory of students (high SES individuals), significantly higher percentages of Catholic students had history/social studies test scores in the highest quartile, and conversely, significantly lower percentages of students had scores in the lowest test quartile.

Males outperformed females on the history/social studies test in both Catholic and public schools, with the differences somewhat greater for Catholic schools. Among Catholic students, 41 percent of all males scored in the highest test quartile, while only 29 percent of the females scored that high. Similarly, one quarter of all public school boys scored in the highest quartile while only one fifth of all girls fell into the highest category.

Just as for reading and mathematics, minority students are more likely to do well in Catholic schools than in public schools. Hispanic and African American students are half as likely to score in the lowest test quartile and twice as likely to score in the highest test quartile in Catholic schools than they are in public schools. Likewise,

Table 9 — Percentage of Eighth Graders in Catholic and Public Schools Scoring in each History/Social Studies Test Quartile by Selected Background Characteristics

	Catholic				Public			
	Lowest Qut.	2nd Qut.	3rd Qut.	Highest Qut.	Lowest Qut.	2nd Qut.	3rd Qut.	Highest Qut.
Total	12.6	21.0	31.3	35.1	27.0	25.1	25.1	22.9
Sex								
Male	12.6	17.0	29.0	41.4	26.8	23.0	25.0	25.2
Female	12.5	24.8	33.5	29.1	27.1	27.2	25.1	20.5
Race/ethnicity								
Asian	8.8	18.9	25.1	47.2	22.9	20.6	26.2	30.3
Hispanic	20.1	27.0	26.8	26.2	42.4	26.1	19.5	12.1
African American	20.1	31.1	33.9	14.9	43.5	32.0	16.2	8.3
White	10.1	18.8	32.2	38.9	21.0	23.7	27.8	27.4
Native American	low n	low n	low n	low n	44.9	30.0	17.1	7.9
Socioeconomic status								
Lowest Quartile	23.9	33.0	24.5	18.7	45.0	28.0	18.0	8.9
Second Quartile	17.8	23.6	34.1	24.6	28.7	28.4	25.6	7.3
Third Quartile	11.4	23.3	30.7	34.5	20.1	25.1	29.6	5.2
Highest Quartile	6.9	14.1	31.8	47.2	10.8	17.7	28.0	3.6

SOURCE: U.S. Deparment of Education, NELS:88 Base Year Student Survey 27

47 percent of Asian students scored in the highest quartile in Catholic schools, compared to 30 percent in public schools.

As with the previous test score results, students' socio-economic status appears to be related to history/social studies achievement in a linear fashion. Most students in the lower two SES quartiles fall into the lower two history/social studies test quartiles, and most students in the upper two SES quartiles have history/social studies test scores in the upper two quartiles. This pattern is

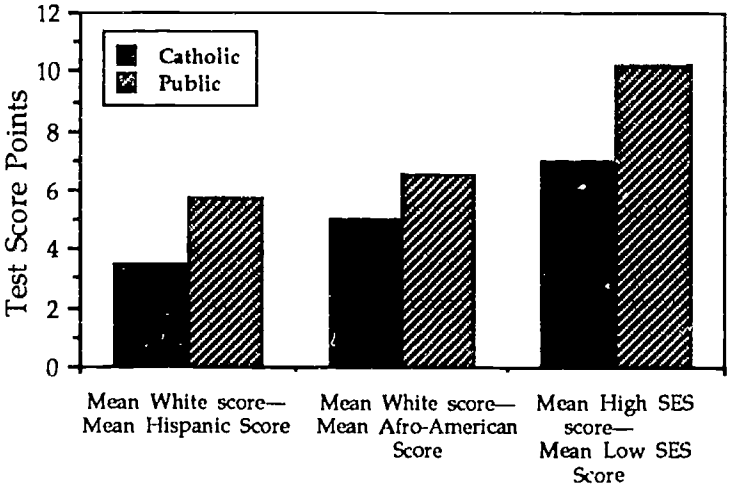
consistent for students in Catholic and public schools. At the same time, when one examines the performance of low SES students, Catholic school students are less likely than public school students to score in the lowest test quartile and more likely to score in the upper range.

A comparison of mean history/social studies test scores of whites and minorities and of high SES and low SES students revealed that differences in the scores of traditionally advantaged and disadvantaged students are smaller in Catholic schools (Figure 6).

Science

Overall, Catholic students score better on the science test than do public school students; however, this is because relatively more Catholic school students score within the third highest quartile, and relatively fewer score in the lowest quartile. Results are shown in Table 10. The

Figure 6—Differences in History Achievement Among Student Subgroups in Catholic and Public Schools



Source: NELS:88 Base Year Student Data

Table 10 — Percentage of Eighth Graders in Catholic and Public Schools Scoring in each Science Test Quartile by Selected Background Characteristics

	Catholic				Public			
	Lowest Qut.	2nd Qut.	3rd Qut.	Highest Qut.	Lowest Qut.	2nd Qut.	3rd Qut.	Highest Qut.
Total	17.1	25.4	31.3	26.2	27.0	24.3	25.3	23.4
Sex								
Male	16.2	21.3	32.3	30.2	26.8	22.0	25.1	6.1
Female	17.9	29.3	30.4	22.4	27.2	26.7	25.4	0.7
Race/ethnicity								
Asian	9.7	25.8	24.5	40.0	23.4	22.7	25.0	28.9
Hispanic	24.9	34.6	26.6	13.9	39.0	30.5	19.9	10.6
African American	33.1	33.7	26.8	6.5	49.0	29.9	15.0	6.2
White	13.6	23.0	33.0	30.5	20.3	22.5	28.3	28.9
Native American	low n	low n	low n	low n	48.9	23.6	18.7	8.9
Socioeconomic status								
Lowest Quartile	30.6	33.6	25.4	10.5	42.6	29.2	19.1	9.1
Second Quartile	20.6	31.5	29.6	18.3	29.4	26.4	25.4	18.8
Third Quartile	15.9	26.4	33.0	24.7	21.3	23.8	28.2	26.7
Highest Quartile	12.1	18.2	32.7	37.0	11.6	16.6	29.2	42.6

SOURCE: U.S. Department of Education, NELS:88 Base Year Student Survey

percentages of students from both sectors scoring in the top category are fairly comparable. There are three exceptions to this pattern: males and Asian students in Catholic schools are significantly more likely to perform at the highest level in science than are public school males and Asians. In both Catholic and public schools significantly higher percentages of males than females perform at the highest level.

In both sectors whites and Asians generally have higher science test scores than African Americans and Hispanics. For example, within Catholic schools, 40 percent of all

Asians and 30 percent of all whites have science test scores in the highest quartile, compared to only 14 percent of all Hispanics and 7 percent of African Americans. The percentage of racial minority students with science test scores in the lowest quartile is alarmingly high for both sectors, although the percentages are substantially lower for minorities in Catholic schools. Nearly 40 percent of all Hispanics and almost half of all African American students in public schools have science test scores in the lowest quartile. In the Catholic schools nearly one quarter of all Hispanics and one third of all African Americans score in the lowest category. In Catholic schools minority students are more likely to have science scores in the third highest quartile than are their public school counterparts.

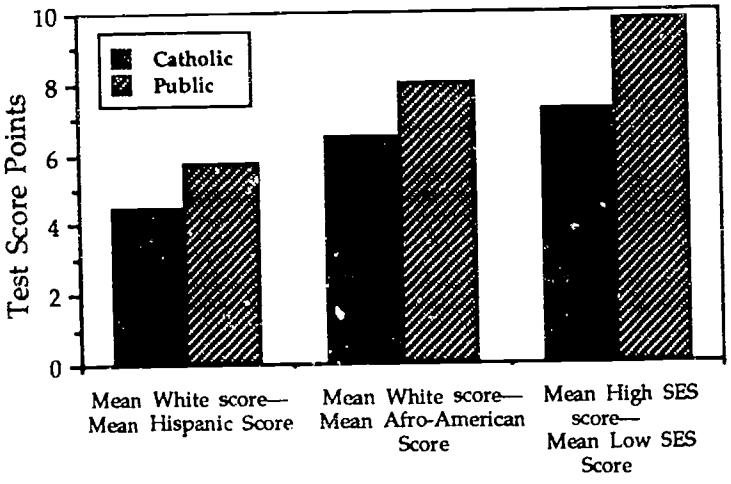
In general, Catholic students outperformed their public school counterparts on the science test. However, comparing across school sector within SES groups, there is one exception to this rule; the percentage of high SES eighth graders in public schools with science test scores in the highest quartile is nearly six points higher than that of the high SES Catholic eighth graders. Consequently, the pattern for science is similar to that of mathematics; high SES students in public schools outperform their high SES counterparts in Catholic schools.

Again, as with the previous three types of test scores, gaps in mean science test scores between whites and minorities and more and less affluent students were smaller in Catholic schools (Figure 7).

In summary, the test results can be viewed from the point of view of both excellence and equity. Excellence refers to high overall achievement for all students, while equity signifies attempting to minimize the differences in performance between advantaged and disadvantaged students.

With respect to excellence, without making adjustments for differences in social backgrounds, overall achievement among Catholic school students was somewhat higher in

Figure 7—Differences in Science Achievement Among Student Subgroups in Catholic and Public Schools



Source: NELS:88 Base Year Student Data

reading, mathematics, history/social studies, and science. However, the general performance on the mathematics test for all students was not exceptional. Many eighth graders in both sectors function at only the basic level. Also, in both math and science, even though Catholic students outperformed public school students, they did so at the intermediate but not the advanced level. Furthermore, in both mathematics and science high SES public school students scored better on their tests than did high SES Catholic school students.

These results are similar to those found by Bryk and his associates (1984). In their analyses of High School and Beyond data, they found that science was the one subject where, at the high school level, public school students outperformed Catholic school students, after adjustments for academic track and social class were made. Their

results pointed to the fact that students from Catholic elementary schools enter high schools with some disadvantage in science. Catholic elementary schools are smaller and less likely to have the laboratories, equipment and specialized staff needed to offer a rigorous science curriculum. Thus NELS:88 indicates that science continues to be a weaker area for Catholic school students.

With respect to equity, there is consistent evidence that African American students, Hispanic students, and students from poor families do better in Catholic schools than they do in public schools. The gap between majority and minority students and advantaged versus disadvantaged students generally was smaller in Catholic schools.

One exception to this general pattern was the differences in the performance of males and females. In both sectors boys outperformed girls on both the history/social studies test and the science test, and the gap was just as large in Catholic schools as it was in public schools.

Conclusions

These analyses indicate that Catholic school students perform at higher levels in reading, mathematics, history and social studies, and science than public school students. At the same time, we have shown that Catholic school students come from more advantaged homes where relatively more families are intact and where the parents generally are more educated. Ideally, it would be desirable to further explore the relative influence of ability and home background versus the educational experiences provided by Catholic schools. However, because the eighth grade survey is the first in a longitudinal series, there is no historical information about the types of schools sample members attended prior to eighth grade nor the educational experiences they received. Because they will contain historical information, follow-up surveys will provide better opportunities for disentangling family, school, and sector effects. Because of these data limitations, any

discussion of sector differences must necessarily center around differences in student outcomes across sectors rather than school effects. While this distinction may seem subtle to some, it is an important one to keep in mind when interpreting the findings presented in this report.

The findings provide strong evidence that students in Catholic schools have different in-school experiences than their public school counterparts. Indeed, there are indications that Catholic school students have greater exposure to learning through their course work. With the exception of practical and vocational courses, foreign language, and science with a laboratory, higher percentages of Catholic school students compared to public school students reported studying the academic subjects and the arts. Furthermore, Catholic students were generally more positive about their teachers, and they appeared to be more involved in their school than were public school students.

Given the need to delve more deeply into the interconnections between students' prior educational experiences, home and school factors, and achievement, our conclusions regarding excellence remain tentative. It appears that students in Catholic schools have average achievement levels that are higher than those of public school students, thus moving Catholic students closer to the goal of excellence.

At the same time it is important to recognize that analyses of the High School and Beyond data, which introduced statistical controls for students' background characteristics, have shown that Catholic high schools were more likely to produce higher average achievement in reading and mathematics than were public schools (Bryk et al, 1984; Coleman, Hoffer and Kilgore, 1982; Coleman and Hoffer, 1987). Consequently, it is possible that future rounds of NELS:88 will further verify the positive effects of a Catholic school education at the eighth grade level.

Regarding equity, the NELS:88 results also confirm those of the earlier research that shows that the gap between traditionally advantaged and disadvantaged students is smaller in Catholic schools than it is in public schools. The findings were highly consistent across all four tests. African American and Hispanic students performed better in Catholic schools than they did in public schools. Likewise, the gap between their performance and that of white and Asian students was smaller in Catholic schools than it was in the public schools. The same is true for lower income students; they performed better in Catholic schools than did the lower income students in public schools, and generally there was a smaller gap in performance between the high SES students and low SES students in Catholic schools than in public schools. Hence, these data suggest that the "common school effect" which Coleman and his colleagues noted in high schools might be present in lower grade schools as well.

There is also evidence that Catholic elementary schools exhibit a greater sense of community than public schools. Communitarian schools have a shared system of values regarding the purposes of the school, what students should learn and how individuals should behave; a common agenda of activities; and a distinct pattern of collegial relations among adults (Bryk and Driscoll, 1988). The analysis we have summarized is not exhaustive, but it has shown that in Catholic eighth grade schools there is a strong tendency of students to participate in extracurricular activities, that teachers are caring and nurturing, and that there is somewhat greater parental interest in children's education than there is in the public schools. The perceptions of students in Catholic schools primarily serving low income students is especially notable in this regard. Schools with a sense of community hold great advantages for students: compared to students in other schools, these students have more interest in learning,

show higher gains in mathematics achievement, and are less likely to drop out of school (Bryk and Driscoll, 1988).

Interestingly, it is just this type of school that the Carnegie Council on Adolescent Development has recommended for middle school age children (1989). In their report they note that adolescents today are facing far different circumstances than adolescents of previous generations. Today there is less sense of community and less opportunity for close-knit relationships. Under these circumstances, the Carnegie Council Task Force urged that middle schools:

> Create small communities of learning where stable, close, mutually respectful relationships with adults and peers are considered fundamental for intellectual development and personal growth. The key elements of these communities are schools-within-schools or houses, students and teachers grouped together as teams, and small group advisories that ensure that every student is known well by at least one adult (p. 9).

Along with the good news about Catholic schools, it is important to recognize the challenges uncovered by NELS:88. First, even though Catholic school students did somewhat better in mathematics and science than public school students, in absolute terms there is still considerable room for improvement. In mathematics, for instance, over half the Catholic school students performed at just the basic level or below basic (38 percent and 13 percent, respectively). And, despite the advantages in terms of home background, Catholic school students were no more likely to perform at the advanced level in mathematics than were public school students. Neither were they more likely to be in the highest performance quartile in science. Consequently, like public school educators, Catholic educators need to find ways to boost mathematics and science performance.

Secondly, in two subject areas—history/social studies and science, there was considerable differences between boys and girls' performance. Eight percent more boys than

girls were in the highest science quartile. In history/social studies the differences were stunning. An estimated 41 percent of boys scored in the highest quartile, compared to only 29 percent of girls. Consequently, Catholic school educators may need to examine curricular offerings and learning experiences for girls in these two subject areas. Such differences are not as apparent in the other two subject areas.

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Appendix

Methodological and Technical Notes

This appendix describes the data source, sample, methods, and composite variables used to conduct this study.

Data Source and Sample Design

Data used for this report come from the National Education Longitudinal Study of 1988 (NELS:88) base year study. To date, NELS:88 is the most comprehensive longitudinal study conducted by the National Center for Education Statistics (NCES) of the U.S. Department of Education. NELS:88 differs from earlier NCES longitudinal studies in that the first data collection began with a cohort of eighth graders rather than a cohort of high school students. The study's major features include the planned integration of student, parent, teacher, and school studies; planned follow-up of the eighth grade cohort at two year intervals; and design linkages to previous longitudinal studies.

The NELS:88 base year study utilized a two-stage, stratified random sample design, with schools sampled during the first stage and students within schools sampled in the second stage (Spencer et al. 1990). The sample of schools, and hence the population to which the sample is generalizable, is limited to "regular" public and private schools with eighth graders in the United States.

In the first stage of sampling, 1,052 schools with eighth grades were chosen. The schools were stratified on the basis of region, urbanicity and percent minority. Of those sampled schools, 105 were Catholic schools. Private schools were oversampled. The second stage of sampling involved

the selection of eighth grade students. For purposes of policy analysis, students of Hispanic origin and students of Asian or Pacific Islander origin were oversampled. Slightly more than 26,000 eighth graders were chosen for the study for an average of approximately 26 students per school. Of the total student sample, roughly 2,600 were from the 105 Catholic sample schools.

School representatives at the eighth grade schools were asked to identify students who were unable to complete the survey. Students who were mentally handicapped, who suffered from physical or emotional problems, or who had a language barrier that seriously restricted their ability to complete the survey were excluded from the sample.

Table A shows sample sizes and completion rates for each component of the NELS:88 base year study.

Table A. — Summary of NELS:88 base year sample sizes and completion rates

Component	Sample size	Completion Rates	
		Weighted	Unweighted
Student questionnaires	24,599	93.4%	93.0%
Student tests	23,701	96.5%a	96.4%a
Parent questionnaires	22,651	93.7%a	92.1%a
Teacher ratings of students	23,188b	95.9%a	94.3%a
School administrator questionnaires	1,035	98.9%c	98.4%c

aThe base for this percentage is the number of students who completed a student questionnaire.

bThis figure represents the number of students who completed a student questionnaire for which at least one teacher rating was completed.

cThe base for this percentage is the number of schools for which student questionnaire data were obtained.

Table source: Eighth Graders' Reports of Courses Taken During the 1988 Academic Year by Selected Characteristics. E.D. Tabs. National Center for Education Statistics. Page 46, table A.

Methodology

The NELS:88 data were analyzed using the CTAB program. The statistical estimates generated by this program were weighted percentages that project to the population of approximately 3 million 1980 eighth graders. In addition to producing percentages, CTAB also calculates standard errors. Specifically, the program uses a Taylor series approximation to calculate standard errors based upon complex survey designs.

Every statistical estimate has an associated standard error. Given two estimates and their standard errors, one can test whether the difference between the estimates is statistically significant. Generally, before differences are tested an "alpha" level is set. The alpha level is an a priori statement of the probability of inferring that the difference detected in the sample exists in the population of interest when in fact it does not. In general, the smaller the alpha level, the more confidence one can have that differences that are detected actually exist in the population and are not the result of random error. For this study, an alpha level of .05 was used. Setting alpha at .05 implies that on average, inferences about statistical differences will be in error 5 percent of the time. All differences cited in this report are statistically significant at the .05 level.

In order to test whether or not differences were statistically significant, t statistics were computed using the following formula:

$$t = \frac{P1 - P2}{SQRT\ (se1 * se1 + se2 * se2)}$$

where P1 and P2 are the percentages being compared and se1 and se2 are their corresponding design corrected standard errors. The obtained t values were compared to published tables which indicate how large t must be in order to be significant at the .05 level.

Variables Used

This section describes the variables used in this report. For more information about the variables used, see the user's manuals for the NELS:88 Base Year data files.

SCHOOL TYPE classifies schools as public, Catholic, or other private based on reports from the school. A few non-Catholic private schools were contacted to confirm their designation.

REGION indicates in which of the four U.S. Census regions the school is located. It was created by recoding the sampled state of the eighth grade school into the four Census Bureau regions.

URBANICITY classifies the urbanicity of the student's school. It was created directly from data provided by Quality Education Data (QED), a private company that compiled the list from which NELS:88 schools were sampled. The classifications are the Federal Information Processing Standards (FIPS) as used by the U.S. Bureau of the Census.

GRADE SPAN classifies schools by the grades they include. Initial data for this variable were taken from questions on the school administrator questionnaire. After the unique patterns of grade spans were determined, the original data were collapsed into seven categories. Data from Quality Education Data (QED) were used when data were missing.

TOTAL ENROLLMENT categorizes the entire school enrollment as reported by the school. The values were created by collapsing data from the school administrator questionnaire into categories. Missing data were imputed from actual enrollment figures reported on the QED file.

SEX was taken first from the student questionnaire. If this source was missing or not available, then the sex variable from school rosters was used. Any records with this variable still missing had sex imputed from the repondent's name. In the small number of cases where this imputation was impossible the value for SEX was randomly assigned.

RACE was also constructed from several sources of information. The first source was the student's self-report. Secondly, if the student information was missing, data from the parent questionnaire were used.

PARENT EDUCATION is the highest level of education reported by either of the eighth grader's parents/guardians on the parent questionnaire, or if these were missing, from responses on the student questionnaire.

SOCIOECONOMIC STATUS (SES) was constructed using the following data from the NELS:88 parent questionnaire: father/male guardian's education level, mother/female guardian's education level, father/male guardian's occupation, mother/female guardian's occupation, and family income. Student data were used to construct SES if all components based on parent data were missing and at least one component based on student data was not missing. Otherwise SES was set to missing. For this report, SES is divided into quartiles using weighted percents.

FAMILY COMPOSITION was created to specify the adult structure of the eighth grader's household. It is derived from the student questionnaire where students indicated which of a list of people live with them.

SCIENCE TEST QUARTILE was constructed from students' scores on the science test which included 25 items that measured students' abilities to reproduce detail,

comprehend, and make inferences and evaluations of text in four areas of science (earth sciences, life sciences, chemistry, and scientific methodology). The sample was divided into quartiles based upon weighted percents. Detailed information about the construction and psychometric properties of this test and other tests referenced in this report can be found in the Psychometric Report for the NELS:88 Base Year Test Battery.

HISTORY TEST QUARTILE was constructed from students' scores on a history/citizenship test. This test consisted of 30 items, 10 on U.S. History, 15 on government and citizenship, and 5 on economic development. The sample was divided into quartiles based upon weighted percents.

TEST COMPOSITE is a combination of students' scores on the reading and mathematics tests. The reading test included 21 items that measured students' abilities to reproduce detail, comprehend, and make inferences and evaluations of text in four areas (literature, science, poetry, and biology). The mathematics test included 40 items measuring skills in simple arithmetic operations, in using decimals, fractions, and percentages, in understanding the relationships among these operations, and in logically solving problems. Students' scores were standardized and summed across the two tests. The sample was divided into quartiles based upon weighted percents.

MATHEMATICS AND READING PROFICIENCY scores were created from the mathematics and reading tests to measure hierarchically ordered cognitive skills, termed proficiency levels. Students were scored as proficient or not proficient at each level. The definitions of the MATH PROFICIENCY levels are as follows:

Level 1: Able to perform simple arithmetical opera-

tions on whole numbers

Level 2: Able to perform simple operations with decimals, fractions, and roots.

Level 3: Able to perform simple problem solving, requiring conceptual understanding and/or the development of a solution strategy.

The definitions of the READING PROFICIENCY levels are as follows:

Level 1: Demonstrates simple reading comprehension including reproduction of detail and/or the author's main thought.

Level 2: Demonstrates ability to make inferences beyond the author's main thought and/or understand relatively abstract concepts.

For more information about the creation of proficiency scores, see the Psychometric Report for the NELS:88 Base Year Test Battery.

COURSE TAKING variables are contained in Part 8 of the student questionnaire which asked the eighth grader about his or her schoolwork. Information about course taking in mathematics and science was drawn from responses to Q.67 and 67B. Information about course taking in the humanities was drawn from responses to Q67B. Information about course taking in the specialized courses was drawn from Q.67B, 67C and 67D. For each of the items students were asked whether they had attended the course at least once a week during this school year.

SCHOOL CLIMATE (Table 5) was assessed by evaluating students' agreement with the following statements: students and teachers get along, there is real school spirit, discipline is fair, the teaching is good, teachers are interested in students, teachers praise me, and teachers really listen to me.

MEAN SCHOOL SES as reported in Table 5 was constructed in three steps. First, the mean SES of sample members within each eighth grade school was calculated. Since students in each school were randomly selected, it was thought that the mean school SES based on NELS:88 sample members would provide a reasonable approximation of the overall SES level of sample schools. In the second step, data points that divided the national sample of schools into thirds based on the school-level SES variable were identified. Finally, a categorical version of the school-level SES measure was created by classifying schools as falling into the lower, middle, or upper third of the national sample based on the continuous school-level SES variable.

PARENTAL INVOLVEMENT was assessed using the following variables from the parent data file: how often parent talks to child about school experiences, how often parent talks to child about plans for high school, number of times parent contacted school about child's academic performance, and how often parent helps child with homework.

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