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A Comparative Study of Student Achievement in Traditional Schools and Schools of Choice in North Carolina

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This policy study examined the differences in student achievement scores in reading and mathematics in selected public middle schools of choice and in traditional public middle schools with similar demographics and socioeconomic characteristics in a southeastern school district in North Carolina during the 1997-1998, 1998-1999, and 1999-2000 school years. The purpose was to determine whether there were significant differences in academic achievement between students in selected public middle schools of choice and students in traditional public middle schools as measured by the end-of-grade test scores in reading and mathematics. The result from the one-way ANOVA showed that there were significant differences in academic achievement between students in selected public middle schools of choice and students in traditional public middle schools as measured by the end-of-grade tests in reading and mathematics.

Keywords: *school choice; choice and student achievement; educational benefits of choice; market reform in education*

School choice has been a major force in the American education system for much of its history. The popularity surrounding choice in public education was initiated in the 1970s as a means for developing and implementing desegregation plans. Increasingly, school districts have used choice to expand curricula and to provide alternatives within the educational setting. Growing dissatisfaction with the productivity of public schools has propelled the issue of choice into a national debate. With the recent national "No Child

Left Behind" legislation of 2001 that provides support for choice through a variety of provisions, proponents and opponents line up on opposite sides to argue the value of the various choice systems. Backers of public school choice maintain that it promotes a racial balance voluntarily, rather than through court-ordered busing of children to distant schools in unfamiliar neighborhoods. They argue that it enhances academic excellence by making individual schools more focused on providing quality instruction to attract students (Belfied & Levin, 2003, 2005; Hoxby, 2001, 2003; Levin, 1992). Finally, choice is seen as a way to counteract the effects of income level on educational opportunity by establishing expanded options for lower income families that are typically available only to wealthier families who are able to buy or rent homes in neighborhoods with more desirable schools (Smrckar & Goldring, 1999). Choice opponents point to the potential for school choice, particularly public-private choice, to lead to greater inequities. They believe that choice could result in a "creaming" of the best students and teachers from traditional public schools, leading to further segregation of the school system by race and income and leaving the public schools as dumping ground for disadvantaged students (Goldhaber, 1999).

Most school choice arguments are aligned with a particular aspect of choice. As a result, it is important to note that the issue of choice in public education is composed of various concepts. The more traditional concepts generally fall under an intradistrict or interdistrict plan. This study focuses attention on intradistrict choice. Under this plan, in structured school districts, parents may enjoy the option of choosing from a wide variety of small and autonomous schools (Clinchy, 1999). Thus, intradistrict choice refers to choice opportunities within school district boundaries. The choices available under this concept are frequently referred to as magnet schools, alternative schools, schools of choice, as well as open enrollment. In many cases, these programs provide incentives to parents and students through specialized curricula themes or instructional methods. Traditional schools, used in the context of this study, comprise the conventional zone schools in which children are placed by geographic condition and not by choice (Smrckar & Goldring, 1999).

Choice programs are extremely popular in North Carolina. More than 75% of all districts with magnet schools have an extremely high demand for student slots, and half of these districts maintain long waiting lists (Blank, Levine, & Steel, 1996). By the early 1990s, school choice was serving a wide spectrum of income and minority groups, according to the National Center for Education Statistics (U.S. Department of Education, 2003). Bradley, Johnes, and Millington (2001) stated that schools of choice

attracted more students because they are perceived to be more efficient in their use of resources. Clark (2005) concluded that reforms that handed more power to schools generated increased demand for such schools. Hoxby (2003) argued that schools of choice create a "tide that lifts all boats." Parents reported higher satisfaction in choice programs (Howell & Peterson, 2002), and parents value freedom of choice (Peterson & Hassel, 1998). Lubienski (2005) emphasized that the serious equity concern about the traditional education system resulted in a shift for choice and competition. Teske and Schneider (2001) concluded that choice is an important way to raise satisfaction levels within the education system.

Despite the popularity of intradistrict choice programs, little is known about the impact of choice on student achievement. The question that has not been adequately addressed empirically in the choice debate is this: Does choice improve the academic achievement of children? As Wronkovich, Robinson, and Hess (1998) pointed out, research on schools of choice is limited, and there are few well-documented experiences with school choice and how it affects academic achievement of students. Even though the surveys of parents do suggest that they enjoy having more control in selecting better schools for their children (Black, 1999), little empirical evidence supports the notion that schools of choice offer educational advantages. After several years of school choice, it is still unclear whether such programs improve student achievement. Researchers have yet to provide a definitive answer for several reasons. Aside from the diversity of choice programs, there is also a diversity of instruments for measuring student achievement (Armor & Peiser, 1997). As a result, there are few quantitative studies on the academic effects of magnet or choice schools. Most of the existing literature focused on program planning and implementation, or on what types of students are being served (Goldhaber, 1999). Yet intradistrict choice remains viable in most school districts today because parental accountability is widely acceptable and stronger than accountability through the political process (Harrison, 2005).

School Choice Research

As stated earlier, research on choice and student achievement is limited. School choice data are limited even when the focus is on addressing specifically intradistrict choice and student achievement. Recent studies are beginning to address charter schools. However, according to Krueger and Ziebarth (2002), charter schools have yet to yield any definitive results on

their effectiveness, despite the attention they receive from both supporters and opponents.

There is evidence that test scores in some schools of choice are higher than in traditional schools, but preliminary research suggests that magnet schools, open-enrollment programs, and charter schools experience varying levels of achievement (Krueger & Ziebarth, 2002). Of the various intradistrict choice programs, magnet schools tend to achieve the highest levels of student productivity. Several studies investigating student achievement in magnet schools provide encouraging results. Blank et al. (1996) conducted a multiyear assessment of elementary magnet schools. Their study revealed that more than 40% of the magnet schools had average reading scores equivalent to at least a grade level above the school district average. In addition, 80% of the schools had average reading and math achievement scores above their district average.

Gamoran (1996) conducted a study of 24,000 students based on a subset of 48 magnet and 213 conventional high schools using the 1988 National Educational Longitudinal Survey data. The author found that magnet school students significantly outperformed their peers attending nonmagnet schools in social studies and reading. Smrcka and Goldring (1999) examined various dynamics and outcomes of efforts to increase parental choice among public schools. Their study focused on decision making for parents in a system of school choice, the nature and quality of family-school interactions in magnet and nonmagnet schools, and the differences in the learning environments and workplace conditions between magnet and nonmagnet schools. Fiske (1991) gave public-school choice, especially the controlled choice program in Cambridge, Massachusetts, credit for numerous improvements.

Dee and Fu (2004) concluded that students learn at magnet schools where principals have the power and incentive to run the school properly. Although various studies provide favorable conclusion for magnet schools, other studies reveal negative or mixed results. A study examining the value-added effects of magnet programs in Prince George's County schools in Maryland revealed that elementary school students in magnet programs performed better than nonmagnet students (Adcock & Phillips, 2000). The study suggested that this gain was largely due to self-selection of more able students for magnet programs. The authors further suggested that talented and gifted students in magnet programs perform worse than talented and gifted students in traditional schools. Weiher and Tedin (2002) emphasized that choice schools can lead to racially distinctive schools.

Howe, Eisenhart, and Betebenner (2002) conducted an investigation of the Boulder Valley Colorado School District's open-enrollment program in

Colorado and concluded that school choice has resulted in increased stratification of schools according to race, ethnicity, income, resources, and achievement. Linn (2000) concluded that school choice has not resulted in improved achievement of students.

Purpose

This study examined the differences in student achievement scores in reading and mathematics in selected public middle schools of choice and selected traditional public middle schools with similar demographic and socioeconomic characteristics using 1997-1998 through 2000-2001 school year data. The purpose of this study was to determine the impact of the school choice initiative on student achievement using a comparative longitudinal study of intradistrict choice and traditional schools. The following research questions were the focus of the study:

Research Question 1: Are there significant differences in academic achievement scores of students in selected public middle schools of choice as measured by the end-of-grade test scores in reading?

Research Question 2: Are there significant differences in academic achievement scores of students in selected public middle schools of choice as measured by the end-of-grade test scores in mathematics?

Research Question 3: Are there differences in demographic and/or socioeconomic variables that appear to affect student achievement outcomes?

Method

Data for this study were obtained from several sources within the North Carolina Department of Public Instruction. The achievement data were secured from the State Department of Assessment and Statistics, whereas the information on school characteristics was obtained from the North Carolina School Building Improvement report. The study was conducted in a southeastern school district in North Carolina. In this school district, about 13,800 students participated in the choice program during the study years. This study focused on middle schools because in this school district, about half of the middle schools operate as schools of choice. According to Unger (1999), top-quality middle schools are those whose students consistently perform at or above grade levels as determined by objectively administered standardized achievement tests. North Carolina is among states that use statewide assessment (end-of-grade test) to measure the achievement of

students in public schools. In its drive for higher standards, the State Department of Public Instruction developed its own end-of-course and end-of-grade tests for students in Grades 3-12. The end-of-grade tests are given to elementary and middle school students, whereas the end-of-course tests are given to high school students. School districts in the state are required to have a record of achievement scores of students scoring at different levels. There are four levels that a student can achieve. Level 1 students did not achieve at the basic level, Level 2 students met the basic level, Level 3 students achieved at a proficient level, and Level 4 students achieved at an advanced level. In this study, we used the percentage of students who achieved at Levels 3 and 4, which represents the proportion of students who mastered the subjects according to North Carolina state policy (Public Schools of North Carolina, 1995-1996).

A purposive sampling technique was used to select the schools for the study. The middle schools of choice with about 50% of their student population from neighborhoods located outside the school's attendance area were selected, and the traditional middle schools with similar demographics and student characteristics were also selected for this comparative analysis. Student size or population, racial/ethnic, and wealth characteristics served as the selection criteria. The percentage of students receiving free or reduced lunches was used as the proxy for wealth.

Statistical Analysis

The purpose of this study was to determine the impact of intradistrict school choice on student achievement. The results presented here are based on the research questions of the study.

1. Are there significant differences in academic achievement scores between students in selected public middle schools of choice and traditional schools as measured by the end-of-grade test scores in reading? To answer this question, a t test was performed to determine if the achievement scores of students in traditional public middle schools were significantly different from the achievement scores of students in public middle schools of choice (at the .01 level) as measured by the end-of-grade tests in reading. Then a one-way ANOVA was used to determine if statistically significant differences exist between the mean achievement scores from the two types of schools. Table 1 provides the descriptive statistics and the one-way ANOVA results for reading achievement scores. Based on the mean scores, the schools of choice had a higher mean than the traditional schools in reading. As illustrated in Table 1, the mean score for the schools of

Table 1
Descriptive Statistics and ANOVA for Reading Scores

	Descriptive					
	N	Mean Score	*SD*	*SE*	Minimum	Maximum
Choice	24	87.4333	7.8655	1.6066	75.50	99.30
Traditional	24	77.9208	8.1229	1.6581	63.60	95.30
All schools	48	82.6771	9.2555	1.3359	63.60	99.30
	ANOVA					
	Sum of Squares	*df*	Mean Square	*F*	Significance	
Between groups	1,085.852	1	1,085.852	16.987	.000	
Within groups	2,940.373	46	63.921			
Total	4,026.226	47				

choice was 87.433 for the years under our study, whereas the traditional schools' mean score was 77.9208. The standard deviation for the schools of choice was 7.86, whereas the standard deviation for traditional schools was 8.12. The one-way ANOVA calculation indicates that there is a statistical difference between the reading mean score of students enrolled in schools of choice and the reading mean score of students enrolled in the traditional schools.

2. Are there significant differences in academic achievement scores between students in selected public middle schools of choice and traditional schools as measured by the end-of-grade test scores in mathematics? To answer this question, a t test was performed to determine if the achievement scores of students in traditional public middle schools were significantly different from the achievement scores of students in public middle schools of choice (at the .01 level) as measured by the end-of-grade tests in mathematics. Then a one-way ANOVA was used to determine if statistically significant differences exist between the mean achievement scores from the two types of schools. Table 2 provides the descriptive statistics and the one-way ANOVA results for math achievement scores. Based on the mean scores, the schools of choice had a higher mean than the traditional schools in math. As illustrated in Table 2, the mean score for the schools of choice was 90.4167 for the years under our study, whereas the traditional schools' score was 80.6917. The standard deviation for the

Table 2
Descriptive Statistics and ANOVA for Reading Scores

	Descriptive					
	N	Mean Score	*SD*	*SE*	Minimum	Maximum
Choice	24	90.4167	8.0472	1.6426	72.50	99.50
Traditional	24	80.6917	9.3764	1.9139	61.90	96.90
All students	48	85.5542	9.9428	1.4328	61.90	99.50
	ANOVA					
	Sum of Squares	*df*	Mean Square	*F*	Significance	
Between groups	1,134.907	1	1,134.907	14.867	.000	
Within groups	3,511.512	46	76.337			
Total	4,646.419	47				

schools of choice was 8.05, whereas the standard deviation for traditional schools was 9.37. The one-way ANOVA calculation indicates that there is a statistical difference between the math mean score of students enrolled in schools of choice and the math mean score of students enrolled in the traditional schools.

3. *Are there significant differences in demographic and/or socioeconomic variables that appear to affect student achievement?* As outlined in Table 3, information derived from data published by the school district indicates that there are differences in the representation of ethnic groups in schools of choice versus traditional schools. The percentage of African Americans in schools of choice decreased, whereas the percentage of other ethnic groups increased. To analyze the socioeconomic diversity of students in schools of choice and traditional schools, we relied on the school-level data about the percentage of students on the federal free or reduced lunch program as an index of socioeconomic status (SES). Most studies in this area (Caldas & Bankston, 1997; Hanushek, 1986) reported that students' SES is an important predictor of student achievement. Caldas and Bankston (1997) found that student participation in federal free or reduced lunch programs had an independent, negative impact on student achievement. Information derived from the school district shows that the schools of choice in this study have more students of high SES as measured by the percentage of students (27.1) on free or reduced lunch programs when

Table 3
Percentage of Middle School Students in Selected Schools by Racial/Ethnic Group

Racial Composition	Choice	Traditional	District
African American	40.2	50.7	47.7
White	48.9	42.7	43.7
Asian American	4.2	1.1	1.6
Hispanic	6.2	5.2	5.2
Native American	0.6	0.4	1.7

Source: Derived from data published in the North Carolina School Improvement Report, 1995-1996.

compared with the percentage of students (56.3) on free or reduced lunch programs in the traditional schools for the years in the study.

Discussion

School choice issues continue to dominate our national discussion on school reform. Across the nation, various forms of choice programs are employed to achieve educational goals. Yet little research is available to address the impact of choice programs on student achievement. When viewed from an achievement perspective, the findings of this study are consistent with the findings from other investigations (Belfied & Levin, 2003; Hoxby, 2003; Gamoran, 1996; Poppell & Hague, 2001) using similar variables. The results showed that students' test scores in choice programs are higher than in conventional settings.

Douzenis (1994) urged researchers to look beyond student achievement scores. This study chose to investigate the demographic variables of ethnicity and wealth to determine their impact, if any, on student outcomes. Wealth appears to have the most influence on outcomes and supports the notion of stratification based on income. This brings us to the question: Does choice really enhance student achievement, or is it another form of sorting?

Howe et al. (2002) concluded from their Boulder Valley Colorado School District study that school choice has resulted in increased stratification of schools according to race, ethnicity, income, resources, and achievement. Studies have found that well-performing schools tend to attract a greater number of high-achieving students, thus increasing already high levels of

student achievement at certain schools and concentrating low levels of student achievement at others (Howe et al., 2002). Those lucky enough to get into a top school see gains in achievement. The same, however, cannot be said for those who are left behind (Krueger & Ziebarth, 2002).

School choice plans also raise the issue of access to information. In general, minority and disadvantage families have inadequate access to information and may not be aware of their options for choice (Bell, Jones, & Johnson, 2002). Likewise, Bast and Walberg (2004) found that parents of low SES could not participate as often as middle-class parents, because of transportation problems and inflexible work schedules. Moreover, it is generally accepted that affluent and savvy parents tend to have unfair advantages in the choice game and tend to have the extra resources needed to support their children's attendance at an out-of-district school (Bell et al., 2002).

This study also revealed some differences in student populations among schools of choice and traditional schools when viewed by race and ethnicity. The percentage of students participating in selected choice schools versus traditional schools increased for all ethnic groups except for African Americans. The findings suggest that African American students are more likely to be enrolled in traditional programs, whereas students of other ethnicities are more likely to be enrolled in choice programs. Even though choice programs were originally initiated to enhance desegregation, the findings of this study suggest that choice schools are not as racially balanced, as we are led to believe.

Conclusion and Implications

This analysis has focused on the influence of intradistrict choice on student achievement. The findings in this study suggest that there are statistical differences in the achievement scores of students in schools of choice compared with those of students in traditional schools. However, it is not clear whether the achievement scores of students were higher because of the large population of students from higher socioeconomic backgrounds. This research study is one step in the research that needs to be done to help educational leaders and policy makers in their reform decisions. Educational researchers need to go beyond the political rhetoric to the goal of improving the learning experiences of all the children in our public schools. With the growing interest in educational accountability, it is imperative that we continue to conduct studies that are designed to provide relevant information on factors that contribute to the achievement of students in public schools. Both state and local policy makers have found

that all aspects of education must be restructured to support higher student achievement. But we need to be mindful that children in every school and classroom should be learning and to focus on the unintended consequences of school choice, which may include skimming off the cream of the crop.

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