

Examining the Distribution of Social Capital across School Sector: Does it Explain Sector Differences in High School Achievement?

Purpose of the Study

Positive effects of attending Catholic schools have been reported in a number of studies. Some studies have shown that Catholic school students are more likely to graduate than public-school students with similar backgrounds (Neal, 1997; William & Schwab, 1995). Others have reported that students attending Catholic schools have significantly higher academic achievement and more positive academic behaviors than those in public schools (Coleman *et al.*, 1982; Hoffer *et al.*, 1985; Jensen, 1986; Willms, 1985). It has been also found that Catholic school students outperform their counterparts in other private schools (Bryk *et al.*, 1993; Coleman & Hoffer, 1987).

Why do student outcomes differ across school sectors? Several researchers have focused on the academic organizational characteristics of schools to explain a mechanism through which sector effects occur (Bryk *et al.*, 1993; Gamoran, 1992). These studies suggest that Catholic school students perform better due, in large part, to more learning opportunities provided by their schools, such as the opportunity to be assigned to an academic track.

Other researchers have paid their special attention to the social characteristics of schools to explain achievement differences between students in Catholic schools and public schools (Coleman & Hoffer, 1987; Morgan & Sørensen, 1999). Specifically, Coleman and Hoffer (1987) attributed the superiority of Catholic schools to “social capital” promoted by characteristics of Catholic schools and parent communities that are based on religious conviction: strong social networks among students, parents, and school staff; shared norms and values regarding what students should do; and intergenerational social closure among parents in the communities. Morgan and Sorensen (1999) empirically examined Coleman’s social capital explanation of the Catholic school effects, focusing particularly on intergenerational social closure. However, the findings from their study do not support Coleman’s explanation, suggesting that any portion of the Catholic school effect is not explained by intergenerational social closure.

Morgan and Sorensen (1999) limited their analysis to one form of social capital, a social network among parents. However, if our focus is on explaining why Catholic schools produce more learning, we need to broadly examine concepts of social capital associated with schools. Social capital which can be accessed by attending different types of schools can be defined as relational ties between students and teachers, bonds between teachers and school administrators, or collaboration between parents and schools.

The relationship between parents and schools has been particularly emphasized by advocates of school choice (Bryk *et al.*, 1990; Chubb & Moe, 1990). They argue that school choice will contribute to making schools more effective by developing better relationships between parents and schools. More specifically, they believe that parents who choose their child’s schools will be more involved in school and more parent involvement will lead to enhanced responsiveness of schools to the needs of students and their communities.

It has been actually found that parents who chose Catholic schools showed greater parent involvement and perceived their schools as more responsive to parent concerns than other parents (Bauch & Goldring, 1995). It has been also shown that students’ reading achievement is significantly enhanced by attending schools with greater parent involvement in school activities

and schools with better communication with parents (Parcel & Mikaela, 2001). Taken as a whole, these studies suggest that achievement differences between sectors may be explained by school social capital created from the relationship between parents and schools.

The purpose of this study is to examine whether sector effects on student achievement can be attributable to the sector differences in parent-school relationships. Previous research on sector effects used data collected at least 15 years ago such as the NELS:88 and the HSB. The proposed study will build on existing literature by employing data from more recent cohorts of students and by focusing on the role of school social capital in explaining the relationship between school sector and student achievement. Specifically, the following research questions are addressed: (1) Are parents in Catholic schools and other private schools more involved in schools than those in public schools? (2) Do students in Catholic schools and other private schools have higher academic achievement than those attending public schools? (3) Do sector differences in parent-school relationship explain achievement differences among Catholic, public, and other private school students?

Methods

Data

Data for this study are drawn from the first two waves of the Education Longitudinal Study: 2002 (ELS:2002). The baseline sample includes a national sample of 752 high schools with 10th grades and over 15,000 high school sophomores who were randomly selected within each school. For the present analyses, the sample is limited to individuals who remained enrolled within the same school from the spring of 2002 through the spring of 2004. Therefore, data for this study are composed of 10,568 students nested in 741 schools.

Measures

The dependent variable of this study is student gains in math tests between the tenth and twelfth grade. The individual- and school-level variables used in the analyses are as follows.

Individual-level control variables: To address the problem of selection bias, a wide range of family- and student-level variables are controlled, including student demographic indicators, family background characteristics, measures of student motivation and practices and a series of parent involvement variables. Individual background variables include gender, race, family SES, and family structure. Other student-level characteristics include respondents' perspectives of math, confidence in studying math, years of advanced math coursework, hours per week spent on math homework, plans to take SAT and their friends' perspectives of schooling. The measures of parent involvement include parent control of student activities, discussion of school-related issues, school contact regarding negative issues such as poor performance and problem behavior, school contact regarding positive academic issues such as course selection and school program, parent involvement in school activities, parent advice about academic issues. Many of individual-level variables are composite measures which are developed using multiple items. In creating composite measures, either factor analysis or reliability analysis was used to show the validity and reliability of measures.

School-level variables: Schools were divided into three categories: Catholic, public, and other private schools. Since his study is interested in examining the role of school social capital

in explaining sector differences in student achievement, it is important to construct school social capital measures as mediating variables. Parents are expected to establish relationships with school by participating in various kinds of school activities and events, which will, in turn, make a difference in school organization. Thus, a composite measure of parent school involvement is included in this study as a mediating variable, which is developed by combining several individual-level items on parent participation in school activities and events, such as volunteering and PTO participation, and then aggregating this student-level composite variable to the school level. In order to control other school-level characteristics, school structural, compositional, and resource variables are included. School structural variables include urbanicity and school size. School compositional variables include the percent of students receiving free or reduced-price lunch and percent of white students. Resource variables include a composite measure of teacher access to media- and computer-related resources, a composite measure of administrators' perspectives of the extent to which learning is hindered by lack of resources in their schools, number of full-time math teachers, and the highest salary paid to full-time teachers.

Analytical Methods

Descriptive analysis is conducted to examine the differences in parent school involvement and student achievement across school sectors, then hierarchical linear modeling (HLM) is used in order to disentangle school-level effects from the individual and family effects on student achievement (Raudenbush & Bryk, 2002).

The HLM analyses are conducted in following steps.

First, as a preliminary analysis, an unconditional model is estimated with only the dependent variable, math gains, and no other student- or school-level variables in order to identify whether there is significant variance in math gains between schools. The chi-square statistics indicate that the intercept significantly differ from one school to the other. Based on such preliminary analyses, I specify the intercept as random and represent it as a function of a set of school-level variables and unobservable school characteristics, that is, a random error term. Since this study is interested in examining whether sector differences in student achievement are explained by school social capital, two different random intercept models are separately estimated with or without an indicator of school social capital, parent school involvement.

In estimating models, all continuous student-level variables are centered around their group means and dichotomous student-level variables are not centered. In the case of school-level variables, continuous variables are grand-mean centered and dichotomous variable are not centered.

Preliminary Results and Discussion

First of all, descriptive analysis shows that students attending Catholic schools and other private schools gain more in their math achievement tests than those in public schools. It also shows that Catholic schools and other private schools have higher parent school involvement than public schools. Test gains and parent school involvement are similarly high in both Catholic schools and other private schools.

Secondly, the HLM model 1 included all the individual-level covariates and school-level covariates except parent school involvement. The result of model 1 indicates that Catholic schools and other private schools produce significantly more learning than public schools above

and beyond other individual- and school-level characteristics. Other school-level variables that are significantly related to student gains in math achievement include the number of teachers and the percent of students receiving free or reduced-price lunch.

Thirdly, the HLM model 2 added an indicator of parent school involvement to examine whether it explains why Catholic and other private school students gain more in their achievement tests than similar students attending public schools. The findings from the analysis show that a substantial portion of sector effects is explained by parent school involvement. When parent school involvement is added in the model, the coefficients of Catholic school and other private school are reduced from 0.839 to 0.535 and from 0.833 to 0.539, respectively. Furthermore, the significant effect of attending other private schools disappears when parent school involvement is included. A measure of parent school involvement is also significantly associated with student math gains, which means that membership in schools characterized by more parent presence and participation enhances student achievement above and beyond the effects of individual-level characteristics.

These findings suggest that the reasons why private school students perform better can be attributable, in large part, to the fact that these schools have more active and higher parent involvement. Schools having more parents who are actively involved in school activities and events are more likely to shape a positive school environment. As Colman (1988) argues, school climate may improve through enforcing norms, establishing expectations, developing caring attitudes, and/or generating trusts. School organizational and structural characteristics may also change through increasing school responsiveness and accountability (Comer, 2005; Rogers, 2004). Although how more parent presence and activities in school lead to increased school effectiveness is not clear, the findings from this study suggest that Catholic and private schools have higher parent school involvement than public schools and these differences make differences in student achievement across school sectors.

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