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Choosing Schools, Building Communities?
The Effect of Schools of Choice on Parental Involvement

February 8, 2007

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Abstract

Proponents of school choice argue that schools of choice build stronger parent communities. Using data from the National Household Education Surveys Program, a nationally-representitive cross-section of U.S. households, I examine the empirical evidence for this claim. To account for the difficulties in identifying causal effects in cross-sectional observational data, I estimate a model that includes the parent's unobserved propensity to both participate in school activities and to choose a public or private school other than their geographically assigned public school.

Introduction

Sociologists of education, political scientists, and other education scholars have long been interested in the extent to which schools foster strong communities among parents, students, and staff. Such communities have been linked to both proximal outcomes such creating a high-quality learning environment and boosting student achievement (Bryk et al., 1993) and also to more distal outcomes, such as student and parent civic engagement and volunteerism (Campbell, 2001; Schneider et al., 2000). In particular, this literature has focused on schools of choice–private and, more recently, charter schools–as having an institutional advantage over their public counterparts in community-building.

While there is an increasing body of empirical evidence that schools of choice do, indeed, have higher levels of parental involvement, it is difficult to determine whether this difference is due to some feature of the schools' management, organization, or policies, or if the difference is driven by the self-selection of parents to the various schooling options. Most of the quantitative research in this area attempts to statistically "control" for obvious differences in parents' socioeconomic status, race/ethnicity, size of schools, etc. However, as education researchers are increasingly aware (Schneider et al., 2006), traditional methods are inadequate for drawing causal inferences from cross-sectional, observational data where unobserved factors, such as parental motivation or religious volunteerism, may exist that are correlated with both the choice and the outcome of interest.

I present here an empirical analysis of the effect of schools of choice on parental involvement that attempts to circumvent this problem by modeling simultaneously the selection of the type of school by parents and the effect of this selection on measures of involvement or participation. I estimate the model using data from the 2003 Parent and Family Involvement in Education module of the ongoing National Household Education Surveys Program (PFI-NHES:2003), a nationally-representative telephone survey of U.S. households' behavior and attitudes regarding many aspects of education.[1] The plan of the paper is straightforward. After a brief review of the literature linking school choice to stronger school communities, I then introduce the empirical model and describe the NHES data in more detail. This is followed by the estimation of the model introduced in the previous section for two measures of parental involvement. Finally, I conclude with some caveats about the modeling approach and a discussion of the broader implications of the results.

Choosing Schools, Building Communities?
All forms of school choice, such as private schools, magnet schools, open enrollment programs, vouchers, and charters, expand the range of options available to parents. Education policy analysts have examined the effects of school choice on variety of outcomes, from parental satisfaction (Schneider and Buckley, 2003) to academic achievement (Hoxby, 2000). Throughout the history of recent choice reforms, two themes have been evident. First, choice has been portrayed as a right that should be made available to everyone (not only to the affluent who have long exercised choice through

residential location and private schooling). This theme was crucial in the adoption of the voucher program in Milwaukee, one of the nations first and Moe (2001) finds strong support for this theme in his comprehensive study of attitudes towards vouchers and it is one of the motivating forces in choice proponents' rhetoric for school reform. In addition to this individual rights theme, there is also a narrative of systemic change, in which school reformers have explicitly coupled choice with a broad challenge to the current system of education. In this view, the market-like forces unleashed by expanded choice– particularly charter schools and vouchers–will leverage needed improvements in the performance of all schools.[2]

The concern for how the broad institutional arrangements of schools affect their performance is a particular concern in the work of John Chubb and Terry Moe, who, in their 1990 book, Politics, Markets, and America's Schools, forged a clear link between choice, markets, and the relationships among stakeholders in schools. Chubb and Moe argue that while school reform has often been considered an "insiders' game," played by bureaucrats, administrators, teachers, and other school professionals and fought over what may seem like technical problems (for example, curriculum, testing procedures, or tenure), the bedrock issue in school reform is the issue of governance: who has the right to participate in the decision making process and at what levels? Chubb and Moe consider this to be a "constitutional" issue because it structures subsequent decisions made by school officials, teachers, parents, and students.

Congruent with this argument, many proposals for reform now seek to rewrite the relationship between stakeholders, building on a widely shared vision emphasizing small, autonomous schools, unburdened by a large administrative structure, and fueled by a desire to bring parents, students, teachers, and administrators into cooperative, supportive relationships. In this vision, parents are given not only the power to choose but are seen as essential to school governance and to the creation of "effective" schools in which the resulting stronger community leads to many positive outcomes, including higher academic performance.

children do better in school, and they go to better schools." Similarly, according to Ostrom (1996, 1079): "If students are not actively engaged in their own education, encouraged and supported by their family and friends, what teachers do may make little difference in the skills students acquire." Bryk and his colleagues have repeatedly demonstrated that parents must be involved in schooling to ensure the quality of schools as institutions serving the community. They also show that children from low-income and minority families gain the most from parent involvement (see, for example, Bryk et al. 1993; Bryk and Schneider 2002; Bryk et al. 1998). Clearly, this vision of effective schools means that stakeholders work together to coproduce higher quality education, making the relationship between parents, students and teachers more cooperative and interdependent (see, e.g., Henig 1994, 187 or Ostrom 1996).

Other linkages between parental involvement and positive outcomes both at the school level and beyond are found in the literature on social capital. Indeed, Coleman's (1988) classic article specifically addressed the question of how effective school communities

can create this elusive commodity. Other work has followed Coleman's lead. For example, Schneider et al. (1996) and Astone and McLanahan (1991) examine social capital as a function of the interactions between administrators, teachers, parents, and children. Bryk et al. (1993) identify the "value added" of Catholic schools to a range of outcomes, many of which relate to norms that support participation and political attitudes (also see Campbell 2000). Carnoy (2000) and Benveniste et al. (2003) similarly emphasize the importance of schools in fostering social and institutional networks. Schneider and his colleagues (1997; 2000) show how public school choice increases social capital of parents, measured by volunteerism, PTA membership, and sociability.

A growing number of studies focusing particularly on charter schools assert that they yield higher rates of parent involvement than other public schools. These higher rates are thought to stem from a culture of as well as policies that nurture (if not quite force) higher involvement (Corwin and Flaherty, 1995; Bryk et al., 1993; Finn et al., 1997). For example, in California, many charter schools use contracts that require parental involvement, including their presence at the school. Contracts often include student attendance requirements, and parent commitment to provide educational materials at home and to support school codes (Schwartz, 1996). According to Miron and Nelson (2000), among Pennsylvania charter schools, half the schools require that parent volunteer, and 25 percent of parents report that they volunteer more than three hours per month. Henig et al. (1999) find evidence public charter schools in Washington, D.C. reach out to parents in similar ways.

Hill et al. argue that charter schools (and, by extension, other schools of choice), freed from many of the bureaucratic rules and regulations governing traditional public schools, have created new key accountability relationships with the teachers, on whose performance the schools depend, and with families, whom the schools must attract and satisfy (2001, 6). These relationships, according to Hill et al., transform the way in which teachers, administrators and parents deal with each other. To use Shklar's (1991) terminology, these schools give parents more standing and grant them rights and privileges that accord them first-class citizenship in the school community. More concretely, choice gives parents the authority to make requests and to expect the school to respond appropriately to the needs of individual children (also see Berman et al. 1998). Combined with the fact that charter schools usually over a smaller, more intimate setting, staffed by people who chose to work in the school, the conditions for stronger ties between parents and the schools exist.

Choice may also put pressure on administrators, teachers and staff to be more "consumer friendly." As Hassel (1999, 6) writes: "Charter schools cannot take their 'customers' for granted. Their very survival depends on the degree to which families believe the schools are responding to family preferences and working hard to provide the education they demand." Teske et al. (2001) also find that parents visiting charter schools are, on average, treated better than parents visiting Washington, D.C. public schools and that the charter schools treat parental requests for information about programs more seriously and responsively than do staff at the D.C. public schools.

Clearly, one putative outcome of school choice reform is the transformation of parents from passive clients of a government service to active partners entitled to a say in how schools are run and how students are taught. But do schools of choice actively foster parent involvement, or are they passive beneficiaries of a sorting process by which motivated parents with a propensity to be involved self-select schools?

An Empirical Investigation

Descriptive Statistics
As noted above, to test whether schools of choice cause an increase in parental involvement relative to traditional public schools, I use data from the pfi-nhes:2003. Specifically, I examine two dependent variables independently. The first variable is a count of how many times the respondent or other adult in the household reported participating in meetings or activities at their child's school since the beginning of the school year. The second variable is a count of how many hours the adults in the child's household spent on volunteer activities or fundraising during the current school year.[3]

Table 1 shows the descriptive statistics for the two dependent variables by type of school. For both outcome measures, parents with children in assigned public schools appear to participate least, followed by those in chosen public schools (although this difference does not appear to be statistically significant at conventional levels), secular private schools, and religious private schools. Substantively, the amount of participation using either measure is about the same for the assigned and chosen public school parents. Parents in private, secular schools appear to participate about 1.5 times as often as parents in assigned public schools, whether measured by frequency of meetings or time spent volunteering.

Parents in religious private schools attend school meetings or events about 1.65 times more often and spend about 1.89 times more hours involved in their child's school than parents in the traditional public schools. These findings are more-or-less in accordance with the literature outlined above, although proponents of public choice schools would perhaps expect a larger difference than observed. However, the simple descriptive statistics in Table 1 are not suffcient for asserting a causal link between schools of choice and parent involvement. Thus I turn to a more complex but appropriate statistical model to attempt to disentangle the effects of schools from parental self-selection or sorting.

Model Specification
The general empirical strategy is to assume that parents choose a particular type (assigned public, chosen public, religious private, or non-religious private) of school as a function of their preferences and constraints (e.g. their budget, the admissions process of private schools, etc.).[4] In addition to choosing the type of school, the parents also choose their level of involvement, again subject to preferences, constraints, and, in theory, to the the effect of the particular type of school. It is very likely that any observational data used to model this choice and behavior process would be missing some diffcult-to-measure covariates, such as parent motivation or sociability, that may be correlated with both the selection and the participation equations. Thus any empirical

model that attempts to draw a causal inference about the effect of sector or type of school on parent participation must also account for these potential unobserved covariates.

Schneider et al. (2006) discuss several empirical strategies for identification of causal effects using large-scale, cross-sectional observational data (see also Goldhaber and Eide 2003; Schneider and Buckley 2003). Deb and Trivedi (2006) discuss an extension of one of these approaches, the Gronau Heckman selection bias model (Gronau, 1974; Heckman, 1976, 1979), for an outcome variable that is a non-negative integer ("count" data) with endogenous self-selection to a multinomial treatment. Let V_{ij}^* denote the "indirect utility" that individual i would obtain if she chose "treatment" j =1, 2, ..., J. This indirect utility can be modeled as:

$$V_{ij}^* = \mathbf{z}_i' \alpha_j + \delta_j l_{ij} + \eta_{ij} \tag{1}$$

where z_i is a vector of observed covariates predicting the choice with parameters α_j and the η_{ij} are the usual independent and identically distributed error terms. The l_{ij} are latent variables included to model the unobserved factors discussed above; they affect the choice of treatment through parameters δ_j. As usual for categorical regression models, since V_{ij}^* is not observed, I fix $V_{i0}^* = 0$ for a reference category j = 0. Although the V_{ij}^* are not observed, the choice of school type is observed and can be encoded using a vector of dichotomous indicator variables di =(di1, di2, ..., diJ).

Deb and Trivedi (2006) assume that the probability of i selecting a given treatment (school type) relative to the reference category has a multinomial distribution with a mixed multinomial logit structure:

$$\Pr(\mathbf{d}_i | \mathbf{z}_i, l_i) = \frac{\exp(\mathbf{z}_i' \alpha_j + \delta_j l_{ij})}{1 + \sum_{k=1}^{J} \exp(\mathbf{z}_i' \alpha_k + \delta_j l_{ik})} \tag{2}$$

The dependent variable, in turn, is a non-negative integer count, $y_i = 0, 1, 2, ...$ The expected value of y_i is given by

$$E(y_i | \mathbf{d}_i, \mathbf{x}_i, l_i) = \mathbf{x}_i' \beta + \sum_{j=1}^{J} \gamma_j d_{ij} + \sum_{j=1}^{J} \lambda_j l_{ij} \tag{3}$$

where the x_i are exogenous covariates with coeffcients β to be estimated, the γ_j are parameters modeling the effect of each type of school (relative to the control group or

excluded category), and the λ_j are the factor loadings of the unobserved characteristics correlated with both selection and outcome. Deb and Trivedi further assume that y_i is distributed negative binomial:

$$f(y_i | \mathbf{d}_i, \mathbf{x}_i, \mathbf{l}_i) = \frac{\Gamma(y_i + \psi)}{\Gamma(\psi)\Gamma(y_i + 1)} \left(\frac{\psi}{\mu_i + \psi} \right)^{\psi} \left(\frac{\mu_i}{\mu_i + \psi} \right)^{y_i} \qquad (4)$$

where the mean parameter is the expected value of y_i and $= 1/\alpha$, $(\alpha > 0)$ is the overdispersion parameter.[5] To identify the model, the the latent factors are scaled in equation (2) by setting $\delta_j = 1$ for each choice j.

Before estimating the model, I first must specify the covariates in z_i (the predictors of choice) and x_i (the predictors of the outcomes measures). As Deb and Trivedi note (and as is the case for the simpler Gronau-Heckman selectivity bias model) it is not strictly necessary that these two vectors be unequal for the model to be mathematically identified, but exclusion restrictions between the two sets of coeffcients are helpful for estimation.

For predictors of the parent's choice of type of school, z_i, I include:

- Household income, a 14 category variable treated here as continuous;

- Number of children (siblings);

- Indicator variables for Census region (Northeast omitted);

- Whether or not the child has a disability, including autism;

- An indicator coded one if neither parent speaks English as their primary language;

- A set of four indicator variables measuring parental education (less than high school omitted);

- Indicator variables for the race/ethnicity of the child (white, non-Hispanic omitted);

- Three indicator variables for the grade level of the school–middle, high, or combined grades (elementary omitted);

- Indicator variables categorizing the percent black or Hispanic in the respondent's zip code (less than 6% as the omitted reference category);

- Whether or not the school is in a rural area;

- An indicator for family status coded 1 if both mother and father are present in the household, and;

- Whether the child is female.

The covariates predicting the outcome measure consist of many of the same measures as above, with the exclusion of the region, urbanicity, and community measures and the addition of the size of the school and the parent's satisfaction with the school. Specifically x_i includes:

- Indicator variables for the type of school (public, assigned omitted);

- Household income, a 14 category variable treated here as continuous;

- Number of children (siblings);

- Whether or not the child has a disability, including autism;

- An indicator coded one if neither parent speaks English as their primary language;

- A set of four indicator variables measuring parental education (less than high school omitted);

- Indicator variables for the race/ethnicity of the child (white, non-Hispanic omitted);

- Three indicator variables for the grade level of the school–middle, high, or combined grades (elementary omitted);

- An indicator for family status coded 1 if both mother and father are present in the household;

- Whether the child is female;

- An indicator coded 1 if the parent reported being somewhat or very dissatisfied with the school, and;

- Whether the school is very large (1000 or more students).

Model Estimation and Results

Deb and Trivedi (2006, 248-9) propose estimating the model described in equations (1-4) via maximum simulated likelihood (MSL) due to the need to integrate the (assumed Normal) unobserved lij out of the joint density. Due to the complexity and thus slow convergence of the model, they further recommend the use of quasi-random draws based on Halton sequences to accelerate convergence (Bhat, 2001; Train, 2003).

Following this advice, I estimate the model via MSL using S = 1000 Halton series-based quasi-random draws per observation. Also, following the advice of McFadden and Train (2000) I compute robust ("sandwich") standard errors to account for the additional uncertainty due to finite S. The results are presented in tables 2 and 3.

The first set of three results in each model, the choice equations, are interpreted the same way as a multinomial logit regression. For example, in the results for the number of meetings/activities model presented in Table 2, parents with more children are, all else equal, less likely to have a child in a public school of choice (p<.01, all p's two-tailed) or in a non-religious private school (p<.05) than in the assigned public school, but number of siblings is not a statistically significant predictor of the probability of choosing a religious private school versus a traditional public school. Similarly, household income does not predict enrollment in a public school of choice, but it is positively related with the choice of either kind of private school (p<.01) over the assigned public school.

In terms of effect sizes, the exponentiated coeffcients in the multinomial part of these models can be interpreted as a relative risk ratio. For example, according to the estimates in Table 2, an increase of one sibling in the household predicts a *ceteris paribus* decrease of $e^{-.160}$ =0.852 in the relative risk of choosing a secular private school over the assigned public school.

For the purpose of evaluating the causal effect of school type on parental involvement, the key coeffcients of interest in each table are the first three rows in the outcome models. These coeffcients may be directly interpreted as percentage changes (compared to the reference case of assigned public school) in the dependent variable. In the case of the model predicting the number of meetings or school events attended (Table 2), parents choosing a religious private schools attend, on average and all else equal, 32.9% fewer meetings or events than their public school counterparts (p<.01) and parents in non-religious private schools attend 17.0% fewer meetings (p< .05). There is no statistically significant difference for public, chosen schools.

For the model predicting the number of hours spent volunteering or fundraising, choosing a public school versus attending the assigned school predicts, on average, an 18.9% increase in the amount of time spent involved in the school (p<.05). Similarly, choosing a secular private school over the assigned public school predicts an increase of 23.0% more time volunteering (p< .10). On the other hand, parents in religious private schools spend, on average, 52.6% less time volunteering or fundraising (p<.01) once the covariates in the model and the unobserved variables potentially correlated with both the selection and the outcome are controlled for.

In each model, the three estimated λ coeffcients provide a statistical test for the effects of selection on the unobservables. For the case of the model predicting the number of meetings or events, the estimated λ's for the two private school options are positive and statistically significant at the 1% level, suggesting that individuals who are more likely to choose either type of private school on the basis of unobserved characteristics also attend more school events. The λ coeffcient for public, chosen schools is not statistically significant at conventional levels. For the model predicting hours spent volunteering, all three λ's are statistically significant at at least the 5% level, although only the estimated values for the chosen public and secular private schools are negative in this case, suggesting that parents who are more likely to choose these types of schools on the basis of unobserved characteristics volunteer less often.

Discussion

The simple descriptive statistics presented in Table 1 suggest that on the whole (and on average), parents with students in schools of choice can be expected to be more involved in the their child's school through more regular attendance at meetings or other activities and through increased time spent volunteering or fundraising. However, the results of the more detailed analyses presented in tables 2 and 3 suggest that the true effect of schools of choice on parents' behavior is more complicated.

Public schools of choice appear to have no effect on increasing parent participation in activities or meetings (as compared to traditional public schools), but they do provide a statistically and substantively significant boost to parents' hours spent volunteering. Private secular schools appear, all else equal, to decrease parental attendance at meetings and activities while there is some evidence that they increase the amount of volunteer time by a magnitude similar to public schools of choice. The most interesting results are found for the case of private religious schools. Here the results of model suggest that after controlling for the observable covariates and accounting for selection on unobservables, these schools markedly decrease the participation of parents (as measured in both attendance at events and meetings and hours spent volunteering) relative to those in traditional public schools.

It is important to keep in mind that the descriptive statistics of Table 1 are not refuted by the subsequent results; rather the two types of analysis are answering different questions. Table 1 tells us, for example, that, on average, parents with children in religious private schools participate more than their traditional public counterparts. However these parents are not randomly selected to attend these schools, and the analyses reported in tables 2 and 3 tell us that, after controlling for observable and unobservable predictors of choice, these parents actually appear to participate less than they would if their child were enrolled in their neighborhood public school. One possible explanation for this result is that parental religiosity is an unmeasured covariate in these models that causes both an increase in the likelihood of selecting a religious school and an increase in parental participation in general. However, when parents place their children in a religious private school, this action itself may obviate some the parents' perceived need to participate or

volunteer at the school (perhaps because they are already volunteering at the associated parish or church).

An alternate explanation, suggested by some of the findings reported in Benveniste et al. (2003), is that the observed effect is the result of these schools' lack of receptivity to parental efforts to influence school operations– that is, the schools may be making it clear that input and participation above a certain level is unwanted. As Hirschman (1970) observes in his classic book, Exit, Voice, and Loyalty, institutions designed to perfect the "exit" option, such as educational choice, may become increasingly incompatible with the use of "voice," (see also McMillan (2000)).

In any event, the results presented here suggest that, while some support is found for the hypothesis that public school choice may build stronger school communities by increasing parental engagement, the empirical results in the literature linking private religious schools to increased parental participation may bear closer examination. It is important to note that models for causal inference using observational data that attempt to control for selection on the unobservables such as those presented here rest their case for identification (and thus unbiased estimation of casual effects) on some fairly strong assumptions, as compared to causal inference from a randomized field experiment. Perhaps more information about the relative ability of different types of school to build strong parent communities can be gleaned either from the existing school choice randomization studies (e.g. Peterson et al. 2002) or else from future experiments.

Footnotes

1. Information about the survey and public access to the data are available at http://nces.ed.gov/nhes/.
2. For a more in-depth exploration of the ideas discussed in this section, see Buckley and Schneider (2007).
3. In the PFI-NHES:2003 questionnaire, these items are labeled as FSFREQ and FSVOLHRS, respectively.
4. Parents, of course, actually choose a particular school and not just a type or sector of school. The data used in this analysis, a nationally-representative telephone survey, do not permit analysis at that fine a level of choice where the attributes of the schools in the parents' choice set are known.
5. The negative binomial distribution is useful for modeling count data with "overdispersion" or extra-Poisson variation possibly due to unobserved heterogeneity. The specification used here is the mean dispersion model, sometimes referred to in the econometrics literature as the "NB2" or "type 2" model (Cameron and Trivedi, 1998, 70-7).

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Tables

Table 1: Two Measures of Parental Involvement, by School Type

Number of Meetings/Activities Attended

School Type	Mean	Std. Error	Minimum	Maximum
Public, Assigned	6.98	0.154	0	200
Public, Chosen	7.28	0.665	0	200
Private, Religious	11.54	0.501	0	100
Private, Secular	10.42	1.04	0	100

Hours Spent Volunteering/Fundraising

School Type	Mean	Std. Error	Minimum	Maximum
Public, Assigned	10.39	0.481	0	600
Public, Chosen	11.14	0.950	0	480
Private, Religious	19.62	1.23	0	600
Private, Secular	15.66	2.19	0	200

Note: Means and standard errors adjusted for survey design and probability weights. Number of observations = 12,179. Data from the PFI-NHES:2003.

Table 2: Joint Estimation of School Type Selection and Number of Meetings/Activities Attended.

Variable	Coefficient	Std. Err.
Public, Chosen vs. Public, Assigned		
Household Income	-0.012	0.010
Number of Siblings	-0.096**	0.030
Region = South	0.087	0.097

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... table 2 continued

Variable	Coefficient	Std. Err.
Region = Midwest	0.314**	0.100
Region = West	0.558**	0.100
Student Disabled	0.117†	0.066
Parents Not English Speakers	-0.451**	0.118
Parent High School Grad	-0.174	0.124
Parent Some College	-0.102	0.125
Parent College Grad	0.017	0.141
Parent Grad or Professional School	0.066	0.146
Student Black, Non-Hispanic	0.589**	0.100
Student Hispanic	-0.100	0.103
Student Asian/Pacific Islander	0.360*	0.177
Student Other Race/Ethnicity	0.204	0.163
Middle School	-0.566**	0.085
High School	-0.237**	0.071
Combined Grades School	0.317**	0.113
6-15% Black or Hispanic	0.150	0.098
16-40% Black or Hispanic	0.412**	0.102
More than 40% Black or Hispanic	0.682**	0.110
Rural	-0.250**	0.092
Mother and Father in Home	-0.089	0.073
Student Female	0.083	0.059
Intercept	-2.021**	0.177
Private, Religious vs. Public, Assigned		
Household Income	0.150**	0.015
Number of Siblings	0.008	0.042
Region = South	-0.776**	0.116
Region = Midwest	0.019	0.112
Region = West	-0.819**	0.125
Student Disabled	-0.226*	0.090
Parents Not English Speakers	-0.651**	0.186
Parent High School Grad	0.505†	0.279
Parent Some College	0.811**	0.279
Parent College Grad	1.537**	0.286
Parent Grad or Professional School	1.462**	0.290
Student Black, Non-Hispanic	-0.209	0.149
Student Hispanic	-0.007	0.127
Student Asian/Pacific Islander	-0.191	0.229

Variable	Coefficient	Std. Err.
Student Other Race/Ethnicity	-0.709**	0.271
Middle School	-4.893**	0.580
High School	-0.970**	0.096
Combined Grades School	1.600**	0.114
6-15% Black or Hispanic	0.482**	0.118
16-40% Black or Hispanic	0.867**	0.124
More than 40% Black or Hispanic	1.226**	0.140
Rural	-1.643**	0.168
Mother and Father in Home	-0.035	0.110
Student Female	0.057	0.076
Intercept	-4.634**	0.330
Private, Secular vs. Public, Assigned		
Household Income	0.087**	0.026
Number of Siblings	-0.160*	0.069
Region = South	-0.947**	0.175
Region = Midwest	-0.788**	0.193
Region = West	-0.581**	0.189
Student Disabled	0.160	0.134
Parents Not English Speakers	-0.147	0.295
Parent High School Grad	0.878	0.565
Parent Some College	1.147*	0.556
Parent College Grad	1.824**	0.572
Parent Grad or Professional School	2.514**	0.571
Student Black, Non-Hispanic	-0.067	0.230
Student Hispanic	-0.834**	0.260
Student Asian/Pacific Islander	-0.040	0.315
Student Other Race/Ethnicity	0.166	0.305
Middle School	-2.285**	0.375
High School	-0.755**	0.177
Combined Grades School	2.625**	0.152
6-15% Black or Hispanic	0.782**	0.199
16-40% Black or Hispanic	1.069**	0.212
More than 40% Black or Hispanic	1.464**	0.247
Rural	-1.400**	0.241
Mother and Father in Home	-0.101	0.178
Student Female	0.101	0.123

Variable	Coefficient	Std. Err.
Intercept	-6.021**	0.601
Number of Meetings or School Events Attended		
Public, Chosen	-0.015	0.164
Private, Religious	-0.329**	0.041
Private, Secular	-0.170*	0.078
Household Income	0.028**	0.003
Number of Siblings	0.012	0.009
Student Disabled	-0.033	0.021
Parents Not English Speakers	-0.308**	0.032
Parent High School Grad	0.252**	0.036
Parent Some College	0.417**	0.037
Parent College Grad	0.622**	0.043
Parent Grad or Professional School	0.665**	0.043
Student Black, Non-Hispanic	-0.191**	0.039
Student Hispanic	-0.177**	0.029
Student Asian/Pacific Islander	-0.491**	0.053
Student Other Race/Ethnicity	-0.144*	0.058
Middle School	-0.326**	0.026
High School	-0.210**	0.027
Combined Grades School	0.096**	0.033
Mother and Father in Home	-0.012	0.024
Student Female	0.010	0.019
Parent Dissatisfied	-0.096**	0.035
More than 1000 Students	-0.082**	0.025
Intercept	1.150**	0.052
$\ln(\alpha)$	-2.396**	0.098
$\lambda_{\text{public, chosen}}$	-0.040	0.191
$\lambda_{\text{private, religious}}$	0.734**	0.030
$\lambda_{\text{private, secular}}$	0.369**	0.056
N	12179	
Log-likelihood	-46710.225	
$\chi^2_{(94)}$	3798.646	

Note: Significance levels (two-tailed)   † = 10%   * = 5%   ** = 1%

Table 3: Joint Estimation of School Type Selection and Hours Spent Volunteering.

Variable	Coefficient	Std. Err.
Public, Chosen vs. Public, Assigned		
Household Income	-0.012	0.010
Number of Siblings	-0.096**	0.030
Region = South	0.108	0.097
Region = Midwest	0.319**	0.099
Region = West	0.573**	0.100
Student Disabled	0.115†	0.066
Parents Not English Speakers	-0.453**	0.118
Parent High School Grad	-0.175	0.124
Parent Some College	-0.101	0.126
Parent College Grad	0.014	0.141
Parent Grad or Professional School	0.070	0.146
Student Black, Non-Hispanic	0.583**	0.100
Student Hispanic	-0.100	0.103
Student Asian/Pacific Islander	0.358*	0.177
Student Other Race/Ethnicity	0.206	0.163
Middle School	-0.566**	0.085
High School	-0.236**	0.071
Combined Grades School	0.318**	0.112
6-15% Black or Hispanic	0.145	0.099
16-40% Black or Hispanic	0.409**	0.102
More than 40% Black or Hispanic	0.682**	0.110
Rural	-0.251**	0.092
Mother and Father in Home	-0.094	0.073
Student Female	0.083	0.059
Intercept	-2.028**	0.177
Private, Religious vs. Public, Assigned		
Household Income	0.146**	0.015
Number of Siblings	0.022	0.040
Region = South	-0.765**	0.114
Region = Midwest	0.090	0.111
Region = West	-0.824**	0.123
Student Disabled	-0.218*	0.089
Parents Not English Speakers	-0.779**	0.190

Variable	Coefficient	Std. Err.
Parent High School Grad	0.458[†]	0.276
Parent Some College	0.800**	0.275
Parent College Grad	1.545**	0.281
Parent Grad or Professional School	1.450**	0.285
Student Black, Non-Hispanic	-0.225	0.147
Student Hispanic	-0.041	0.125
Student Asian/Pacific Islander	-0.103	0.233
Student Other Race/Ethnicity	-0.750**	0.267
Middle School	-4.857**	0.582
High School	-0.954**	0.092
Combined Grades School	1.551**	0.111
6-15% Black or Hispanic	0.471**	0.114
16-40% Black or Hispanic	0.846**	0.119
More than 40% Black or Hispanic	1.114**	0.135
Rural	-1.463**	0.159
Mother and Father in Home	-0.084	0.110
Student Female	0.080	0.074
Intercept	-4.551**	0.324
Private, Secular vs. Public, Assigned		
Household Income	0.093**	0.026
Number of Siblings	-0.148*	0.068
Region = South	-0.844**	0.174
Region = Midwest	-0.670**	0.193
Region = West	-0.511**	0.189
Student Disabled	0.151	0.135
Parents Not English Speakers	-0.167	0.293
Parent High School Grad	0.848	0.566
Parent Some College	1.138*	0.555
Parent College Grad	1.801**	0.571
Parent Grad or Professional School	2.479**	0.570
Student Black, Non-Hispanic	-0.096	0.230
Student Hispanic	-0.854**	0.260
Student Asian/Pacific Islander	-0.004	0.308
Student Other Race/Ethnicity	0.099	0.309
Middle School	-2.309**	0.378
High School	-0.757**	0.177
Combined Grades School	2.603**	0.152

Variable	Coefficient	Std. Err.
6-15% Black or Hispanic	0.768**	0.198
16-40% Black or Hispanic	1.023**	0.210
More than 40% Black or Hispanic	1.422**	0.244
Rural	-1.358**	0.242
Mother and Father in Home	-0.103	0.176
Student Female	0.090	0.122
Intercept	-6.115**	0.603
Hours Spent Volunteering or Fundraising		
Public, Chosen	0.189*	0.082
Private, Religious	-0.526**	0.074
Private, Secular	0.230†	0.124
Household Income	0.040**	0.006
Number of Siblings	0.009	0.018
Student Disabled	-0.049	0.040
Parents Not English Speakers	-1.035**	0.083
Parent High School Grad	0.784**	0.094
Parent Some College	1.020**	0.094
Parent College Grad	1.366**	0.100
Parent Grad or Professional School	1.392**	0.101
Student Black, Non-Hispanic	-0.145*	0.060
Student Hispanic	-0.213**	0.057
Student Asian/Pacific Islander	-0.333**	0.108
Student Other Race/Ethnicity	-0.318**	0.116
Middle School	-0.921**	0.055
High School	-1.117**	0.058
Combined Grades School	-0.321**	0.060
Mother and Father in Home	0.100*	0.048
Student Female	0.091**	0.035
Parent Dissatisfied	-0.375**	0.071
More than 1000 Students	0.021	0.049
Intercept	0.550**	0.130
$\ln(\alpha)$	-0.145	0.174
$\lambda_{\text{public, chosen}}$	-0.238**	0.071
$\lambda_{\text{private, religious}}$	1.415**	0.075
$\lambda_{\text{private, secular}}$	-0.175*	0.081
N	12179	
Log-likelihood	-45750.354	

Variable	Coefficient	Std. Err.
$\chi^2_{(94)}$	3514.960	

Note: Significance levels (two-tailed) † = 10% * = 5% ** = 1%