Does the amount of school choice matter for student engagement?

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Abstract

School choice may increase student engagement by enabling students to attend schools that more closely match their needs and preferences. But this effect on engagement may depend on the characteristics of the choices available. Therefore, we consider how the amount of educational choice of different types in a local educational marketplace affects student engagement using a large, national population of 8th grade students. We find that more choice of regular public schools in the elementary and middle school years is associated with a lower likelihood that students will be severely disengaged in eighth grade, and more choices of public schools of choice has a similar effect but only in urban areas. In contrast, more private sector choice does not have such a general beneficial effect.

Keywords

School choice; School disengagement; School dropout; Educational policy

1. Introduction

School choice is believed by some to produce organizational changes that lead to the more effective education of students, but whether this happens is highly disputed. Yet, even in the absence of any school improvements, if choice encourages better matching between students and schools, then more choice may positively influence a variety of student outcomes. Given the importance of student engagement for academic success (Finn & Rock, 1997, p. 222) and the intuitive idea that more choices should lead to a higher probability of finding a school that matches children's needs and preferences, in this paper we use data from a national probability sample and consider the effect of the amount of school choice in the local educational market on distinct student engagement clusters, some of which reflect a higher risk of disengaging from school. We measure engagement in the 8th grade using fourteen diverse indicators derived from parent and student reports and employ latent class modeling to identify clusters along the engagement/disengagement spectrum and then proceed to predict membership in these clusters using multinomial logistic regression. After controlling for the important demographic factors associated with student engagement, we find that more public sector choice in the elementary and middle school years has beneficial

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effects on 8th grade student engagement. In contrast, though students attending private schools are less likely to be disengaged, in aggregate more private sector choice does not improve engagement.

Expanding school choice is alleged to have many positive benefits, but most research has focused on whether choice improves student performance, usually judged by standardized test scores. Choice could potentially improve student outcomes such as graduation rates by increasing student engagement even if test scores do not improve, however. Indeed, if choice helps to keep students in the school system that might otherwise drop out in later years, it could ultimately reduce mean test scores in high school but produce more high school graduates. Because high levels of student engagement are associated with many positive academic outcomes (Finn & Rock, 1997, p. 222; Fredericks, Blumenfeld, & Paris, 2004, pp. 70–71) and choice is likely to expand in the future, it is important to understand how choice may influence student engagement. Allowing students to more easily change schools and have a greater number of choices may produce the more efficient matching of students with schools that fit their needs and preferences, positively affecting engagement. But choices that are not available to very many at-risk students may have a minimal impact on engagement. To examine these arguments we use a large, national panel data set of students and parents, allowing for more generalizable results than are usually found in choice studies, which tend to focus on a small number of school districts in particular states.

1.1. Research context: school competition, matching and improved student engagement

School choice has been advocated for many decades (Friedman, 1962, p. 89) and it might improve student outcomes in one of two ways. Competition may lead schools to make changes that improve their academic performance (Chubb & Moe, 1990, p. 190) or choice may facilitate children attending schools that better fit their needs and preferences. While some parents may be highly sensitive to academic quality (Schneider, Teske, & Marschall, 2000, p. 95; Tedin & Weiher, 2004, pp. 1115–1116), judging by their searches for school information and actual school choice decisions, it is clear that parents consider many factors when choosing schools, such as particular racial characteristics, religious instruction, and proximity to home (Buckley & Schneider, 2003, p. 131; Smith & Meier, 1995, pp. 470–476; Wrinkle, Stewart, & Polinard, 1999, pp. 1250–1252). Due to these heterogeneous preferences, whether competition from expanding choice should automatically lead to more academically effective schools in an objective sense is certainly questionable. And studies on whether more choice and competition increase academic quality are highly inconclusive (Smith, 2005, pp. 289–293).

Even if individual schools do not become objectively better academically, more choice could lead to better student outcomes via improved sorting or matching. In his classic work, Tiebout (1956, pp. 416–424) argued that more fragmentation (a larger number of governments in a given area) would lead to more satisfied citizens because in such a market consumers are more likely to sort themselves into a tax-service package that matches their preferences. Similarly, scholars have argued that student outcomes will be best when school systems are decentralized and maximize the ability of families to choose schools that match their preferences (Coons & Sugarman, 1978, pp. 45–70). Because parents have heterogeneous preferences, in a competitive market schools should be expected to differentiate their product on vertical and horizontal dimensions (Glomm, Harris, & Lo, 2005, p. 452), and there is evidence that different types of students benefit from attending different types of schools (Kelly & Price, 2009, p. 810). Due to resource differences, choice cannot be exercised equally by all individuals even in a highly competitive market. Yet, all else equal, with more choices families will have a greater ability to choose schools that match their needs and preferences, which will potentially increase student engagement. This possible increase in engagement is important because engagement implies acceptance of

school rules and norms, and that students are less alienated from school, producing better outcomes (Finn & Rock, 1997, pp. 222–223).

There has been little examination of how the improved sorting associated with more school choice may facilitate student engagement. Tiebout's (1956, pp. 416–424) argument is general and not restricted to citizen interactions with schools, however, and several studies have examined how more choice of general purpose local government influences citizen engagement. These studies have produced inconsistent results (DeHoog, Lowery, & Lyons, 1990, pp. 82–85; Kelleher & Lowery, 2004, pp. 721–728; Lyons & Lowery, 1989, pp. 855–862). In the context of schools, studies have examined the effect of attending a school of choice on graduation, which is closely related to student engagement. Booker, Sass, Gill, and Zimmer (2011, p. 377) find that attending a charter school produces higher graduation rates and higher college attendance rates. Cullen, Jacob, and Levitt (2005, p. 729) find that there is no consistent difference between students from families that have actively chosen a school and those that attended the assigned regular public school in terms of dropping out of school, but students attending career academies were significantly less likely to drop out. In contrast, in what is perhaps the most comprehensive study examining Chicago's schools because it includes the widest variety of school types, Lauen (2009, p. 179) finds that children from families that actively chose a school other than the assigned regular public school are modestly more likely to graduate than students who attended the assigned regular public school.

These studies are somewhat contradictory, but based on Chicago's experience it seems that there are some positive effects of individual choice. Given our theoretical interest, however, focusing only on the differences between those children who attend schools other than the assigned regular public school and children who attend the assigned regular public school is not sufficient because this does not directly address how a more competitive context influences student engagement, since choice is also exercised in residential decisions. Despite reforms of recent years most choice consists of parents choosing among different school districts and school zones in their residential decisions and there is tremendous variation in the number of public schools serving similar sized populations across areas (Hoxby, 2000, p. 1223). With more options available, initial residential decisions to attend a particular local public school should also more closely fit family preferences and therefore individuals that remain in the regular public schools may also demonstrate higher levels of engagement. Thus there may not be a large difference between those attending the assigned regular public school and those that have chosen a different school if all students are more efficiently matched, but both types of students should be more highly engaged where there are more choices. So it is necessary to consider the effect of the total choice in the educational environment, while controlling for the content of individual choices which may also affect student engagement.

1.2. Types of choices available and student engagement

Based on the arguments above it seems that choice may allow for more efficient sorting and higher engagement, but not all types of choice will necessarily have the same effect on aggregate student engagement because of the variation in the availability of different types of choices to large numbers of families, especially those families that are likely to have students at risk of disengagement. Most obviously, private schools are often a realistic option only for higher SES families because of the significant cost of most private schools (Hoxby, 1998, p. 47). Furthermore, these high SES families are precisely the types of families likely to have engaged children and the most realistic school alternatives in the first place. Therefore, the general effect of private school competition on matching, especially for those students most at-risk of disengagement, is perhaps limited. Merely having a choice is of little use if most people cannot realistically consider it. If this is the case, then we will

observe that the amount of choice in the private sector has little effect on aggregate engagement.

In contrast, regular public schools and public choice schools (charter schools, magnet schools, etc.) are, by law, accessible to all students and do not require significant financial resources to attend. In addition, charter schools, are especially focused on urban districts where regular public schools are failing and disengagement from schools is a serious problems. Thus, we anticipate that regular public schools and charter schools will have a general beneficial effect on student engagement. Charter schools, however, may be particularly effective in improving engagement in large cities. Given these possibilities, we analyze the effect of competition in the regular public, charter school, and private school sectors in both the full sample and a sample restricted to only large and mid-size cities.

In addition to the amount of choice in the environment, which is our main theoretical interest, scholars have consistently shown that individual factors like race/ethnicity, gender, SES, and past academic achievement are important determinants of student engagement (Kelly, 2008, pp. 435–436). We control for all of these factors in the analysis. Lee and Smith (1993, p. 172) also find that a larger number of eighth graders in the school reduce the engagement of eight grade students and therefore we also control for the students' grade-level enrollment in the school.

1.3. The present analysis

Based on the discussion above, we hypothesize that in counties where there are more schools there will be more student engagement in the 8th grade, after controlling for other factors in both a full sample of schools and central cities.[1] We consider the effect of more choices in the elementary and middle school years, since signs of disengagement may be observed as early as Kindergarten and a poor start leads to future problems (Lehr, Sinclair, & Christensen, 2004, p. 280). Since school engagement is a heterogeneous construct, we identify latent subgroups of disengagement risk in the 8th grade and model these in relation to the effect of choices.

Endogeneity and self-selection bias are often a threat to inferences in studies of school choice and random or quasi-random assignment are thus becoming increasingly useful (Kisda & Wolf, 2010, pp. 783–805). Randomly assigning families to different areas of the country with varying levels of choice is obviously not possible, so observational data must be used for this study. In any case, for this analysis (unlike studies examining the effect of enrollment at a choice school on behavior or outcomes), self-selection into the treatment group is not a major concern because the amount of choice in the local educational marketplace is simply not a common reason why people choose to live in particular parts of the country. People live near where they grew up and attended school and when they move it is usually for a job or warmer climate, not in search of more competition in the schools (Chen & Rosenthal, 2008, p. 519).

The number of regular public and private jurisdictions/schools reflects deeply rooted historical, institutional and perhaps even geographical conditions over which current policy-makers have little control (Hoxby, 2000, p. 1214; West & Wormann, 2008, pp. 4–9), but it is possible that more schools will be created where students are more disengaged since school choice programs tend to be aimed at such areas. However, in the charter sector the formation of new schools does not simply depend on objective educational need but is instead largely determined by political and institutional factors at both the state and local levels (Zhang &

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[1]To identify central city schools we use the ECLS-K definition of "large and mid-sized cities" located in the center of a MSA or CMSA.

Yang, 2008, p. 571). In addition, our findings indicate that, if anything, charters are associated with higher engagement. Thus, though there are some concerns with endogeneity, the number of schools is largely exogenously determined and this potential problem probably does not affect our results very much.

It is necessary to control for a child's current school, but unlike the effect of competition in the local educational marketplace, we cannot be certain that any effect of a child's current school is causal rather than simply the result of self-selection. We are not very concerned with these inferences, however, since the effect of the individual choice is not our primary theoretical interest. Nevertheless, the results for these variables mostly confirm previous findings that students and families with students attending private schools are more highly engaged in school (Bryk, Lee, & Holland, 1993, pp. 277–289; Cox & Witko, 2008, p. 152).

2. Methods

2.1. Data sources

We use two sources of data for our analysis. The child (engagement and demographic) and school type variables are taken from the Early Childhood Longitudinal Study-Kindergarten (ECLS-K) dataset. With the exception of student test scores, which were obtained from the third grade round of data collection because we wanted test scores to precede our observation of student engagement, our child data are obtained from the eighth grade round of data collection, which occurred during the school year in 2006–2007. The ECLS-K began with interviews of parents, students, teachers, and administrators in Kindergarten and additional rounds of interviews were conducted in third, fifth, and eighth grade. All students who remained in the same school from Kindergarten-5th grade were targeted in the 5th grade round, but only a sample of children who switched schools were targeted. All children targeted in 5th grade who remained in schools in the United States were also targeted in 8th grade. Due to the survey design, the 8th grade round of data is representative of most but not all subpopulations in the country. For example, students who moved to the US after first grade and students who were initially home schooled. Panel weights were calculated to correct for over-sampling and panel attrition.

For the school choice measures, we use two databases containing the numbers and types of schools across the country. The first is the Common Core of Data for all public schools and for public school districts, which we use to develop measures of competition in the regular public school and charter school sector. The public school data includes public schools and districts from 2001. The second database is the Private School Universe data from 2001 to 2002, which was used to measure competition in the private sector.

2.2. Indicators of disengagement risk

The students in the cohort we analyze were in the 8th grade in 2006–2007. In the 8th grade interview the ECL-K does not possess an index of school engagement but instead has several diverse items that broadly reflected behavioral, and academic domains of engagement that are conceptually consistent with prior research (Archambault, Janosz, Fallu, & Pagani, 2009, pp. 788–789). We used fourteen variables to assess the diversity of (dis)engagement risk and identified latent subgroups across the pool of participants (see Appendix A). These data were collected at the final interviews and importantly provided a multi-measurement strategy because items were derived from both parent and student self-report. Parents were asked if their child had ever been suspended (0 = no, 1 = yes) from school, the number of times they were suspended, and how frequently they attended school. Parents were also asked if their child had been diagnosed (0 = no, 1 = yes) with a learning or behavioral disorder by a professional.[2] The final set of parental reports pertained to how

frequently their child worked on homework and whether there were family rules (0 = no, 1 = yes) with respect to the number of hours of daily or weekly television viewing.

Students were asked if they had a tutor or mentor to help them in the past year with reading (0 = no, 1 = yes), math (0 = no, 1 = yes), and science (0 = no, 1 = yes). Five ordinal items queried students about the extent to which they fit in at school in general and with teachers and their classmates. Finally, a peer engagement variable comprised of three items (range = 0–12) was used that assessed whether their friends attended class regularly, received good grades, and would likely continue their education past high school.[3]

We use these individual indicators that assess various aspects of school disengagement risk to model its latent structure in the data. We do so for several reasons. First, engagement is a multidimensional and heterogeneous construct and not captured by a single dimension or variable. Second, the data source employed (ECL-K) does not use an explicit school engagement measure and is not a scale or summary index as available variables are diverse, noninterval, and measured using different response formats. Third, using latent class modeling provides a number of advantages including the flexibility and relaxing of measurement assumptions, using diverse response formats, increased classification accuracy of important constructs, and the ability to identify and specify important engagement subgroups and specify effects of key covariates accordingly (McLachlan & Peel, 2000, p. 1; Vermunt & Magidson, 2003, p. 536–37).

2.3. Explanatory variables: school choice/competition in the local educational marketplace

To develop measures of the choice context we need to determine the geographic area that comprises an educational market. This varies to some degree in different areas and even across individuals depending on parent preferences, geography and government fragmentation, so there is no single best way to capture this. However, we need a consistent measure across the country to conduct our analysis. The one common unit available for public and private schools in the databases we use is the county. The county is not perfect because some parents choose from schools in other counties. But the data allow us to aggregate schools at this level and it should give a good idea about the effect of choice on engagement. Therefore, to measure the amount of choice in a particular area we use the number of schools in the child's county of residence, per 10,000 students in the county in order to adjust for population size.

Because of the possibility of different effects depending on the different types of choice discussed above, we created three independent variables using the Common Core and Private School Universe Data: the number of private schools per 10,000 students in the county, the number of public schools of choice per 10,000 students in the county, and the number of regular public schools per 10,000 students in the county. In shorthand, we refer to these public schools of choice as charter schools since most of them are charter schools, but this measure includes any public schools that are not regularly assigned public schools, and that people must actively choose to attend. For example, in some cities magnet schools are choice schools where families must apply and be admitted via a lottery or by meeting certain admissions requirements while in some cities they are also regularly assigned public schools. Only the former type of magnet school would be included in this measure. So the

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[2]To our knowledge, the literature is not clear whether LD generally is associated with greater or lower levels of school engagement. It could be argued that it is over and under diagnosed across different school systems and states. However, we choose to include this variable because this variable also contains diagnosis of ADD/ADHD which has a higher prevalence compared to other LD's and has been linked with disengagement (e.g.,Junod, DuPaul, Jitendra, Volpe, & Cleary, 2006).
[3]Though it may not seems intuitive to include information about peer networks in this type of measure, South, Haynie, and Bose (2007) convincingly demonstrate that weak peer networks composed of low-achieving students is a risk factor for dropping out, which is closely related to disengagement.

charter school variable also includes magnets or other types of public schools that must be actively chosen, and not regularly assigned public schools, where students must simply enroll and attend.

In the full sample there are 22.85 regular public schools per 10,000, 12.23 private schools per 10,000 and 0.40 public schools of choice per 10,000 (see Appendix B for mean values and standard deviations). Not surprisingly, there are fewer private schools and public schools of choice. Indeed, the data show clearly that despite the policy debates surrounding them, there are few charters compared to other school types. The total number of elementary school students in the county is calculated by summing the number of private elementary students from the Private School Survey and the number of public elementary students from the Common Core. Because matching can take place at any time in the child's schooling and even before they enter school, we code the amount of competition as the number of middle and elementary schools in the county (i.e. schools up to and including 8th grade, but not including grades after the 8th since these students would not have been able to choose among these schools).

Admittedly, there are limitations to considering only the total amount of choice available in the environment. Presumably, students would benefit most where there are good, quality choices or choices that appeal to different types of families. Nevertheless, the total number of schools is an intuitive indicator of the choice in the educational environment and by definition families will have more choices when there are more schools. All else equal, differentiation among schools is also more likely where there are more schools, though there are certainly markets where a single dominant provider-type is emulated by most market participants. Furthermore, other measures of school competition (such as a Herfindahl index of school enrollment or the percentage of private school enrollment) have serious drawbacks and do not assess differentiation any better than our measure (Belfield & Levin, 2002, p. 282).

With our aggregate analysis definitively determining the micro-level causal process that produces the aggregate relationships we observe is difficult. It may be that the mere existence of more choices improves engagement somehow. If our argument is correct, it is the number of choices which translates into a greater suitability of choices for more students. Our competition measure alone cannot distinguish between these possibilities. However, in controlling for student SES we are also indirectly controlling for the quality of options available, since higher SES individuals will always have more high-quality options than low-income individuals. In addition, we also control for the type of school that the student attends at the individual level, so we can distinguish a school-sector effect from a competition effect.

2.4. School characteristics

Notably, the type of school a child attends may influence their engagement, and though we are not primarily concerned with this we must control for it in the analysis. Catholic school students are more highly engaged than similar students attending public schools (Bryk et al., 1993, pp. 277–289; Coleman & Hoffer, 1987, pp. 115–185). There may also be other sectoral effects, but there is not consistent evidence on this point. Nevertheless, we include a series of dummy variables indicating whether students attend a Catholic school, a non-Catholic private school, a magnet school, or charter school (regular public school is the omitted category). In addition, we control for the school's 8th grade enrollment which may affect engagement (Lee & Smith, 1993, p. 172).

2.5. Demographic variables

Individual demographic and academic characteristics are clearly important determinants of engagement (Kelly, 2008, pp. 441–445) and we use a number of variables from the ECLS-K data to control for them. African-Americans and Hispanics generally have lower levels of engagement, and we control for whether a student is African-American or Hispanic (all other races/ethnicities are omitted categories). We also control for socioeconomic status using a five point scale included in the ECLS-K data. Finally, we control for the student's math standardized test score in the previous rounds of data collection since research indicates that prior academic success affects current levels of student engagement (Kelly, 2008, pp. 440–441).

2.6. Analytic plan

This study uses latent class modeling (LCM) to derive engagement risk clusters and then predict membership in those latent subgroups. LCM is a valuable analytic strategy in this study because of the diverse set of variables used to capture engagement or lack thereof and aggregate statistics often miss underlying heterogeneity, especially in a broad phenomenon like school engagement. LCM is a form of person-centered analysis that assigns individuals to latent or unobserved classes or cluster based on response probabilities. This stands in contrast to factor analysis which is variable centered, based on inter-correlations, and is used for dimension reduction.

We predict membership in the latent engagement classes using previously described sociodemographic and school choice and school characteristics covariates. Functionally, this is equivalent to a multinomial regression model regressing the probability of class membership on predictor variables in the model. Two multinomial regression models were executed. First we analyze students at all schools. Next, because of the fact that choice is thought to be most beneficial in failing urban school districts, and we analyze a restricted sample to students attending schools in central cities located in a Consolidated Metropolitan Statistical Area or Metropolitan Statistical Area. Sampling weights that adjust for the complex survey sampling design, probability of selection, and nonresponding are incorporated in the analysis. A Taylor series linearization is implemented to adjust standard errors of estimates for complex survey sampling design effects including clustered data. Analyses are conducted using LatentGOLD 4.5 and Stata10SE. All models in Stata were estimated using the svy commands for analyzing complex survey data.

3. Results

We begin our discussion of results by discussing the latent engagement clusters found in the ECLS-K data. We then turn to the effect that school choice and competition has on membership in these clusters, while controlling for the other factors that affect student engagement. First we discuss the results for the full sample of schools, and then we turn to the results for the sample of urban schools and students.

3.1. Identification and characteristics of latent classes

We use LCM because this technique makes no assumptions regarding variable measurement and flexibly takes into account the inherent heterogeneity in disengagement risk in such a large nationally representative sample. A series of latent class models, also referred to as clusters, ranging from 1 to 5 classes are estimated out to model the underlying heterogeneity in the data. The Bayesian Information Criterion (BIC) was used as one method to select the best-fitting model. A lower BIC value suggests the model with a better fit and parsimony. Log-likelihood values are used to assess model fit. Higher values reflect better model fit. In addition, we use entropy, a standardized measure of how accurately respondents are

classified, to guide the selection of the final model. Higher values are preferred. The theoretical interpretability of various class solutions is also considered to aid in selection of the final model.

Comparative statistics for class models suggest that the five-class solution is the best fitting model (Table 1). BIC values are lower for the five-class model compared to the four or three-class models. With respect to purity of class assignment, entropy values indicate a small but meaningful increase from the four-class model (86.1) to the five-class model (92.3) and associated reduction in classification error (8.7–4.5%). Inspection of the log-likelihood values also suggests the five-class solution was optimal. There was an accelerated decrease in these values as the fifth class was added suggesting that the five-class solution was superior. The five-class solution also results in conceptually meaningful clusters that varied significantly in their levels of engagement.

As shown in Table 2, there are significant proportional differences across the five classes with respect to major sociodemographic and school characteristic data. The final five-class solution is comprised of a highly engaged Class 1 (31.6%, $N = 3060$) characterized by a high proportion of females and relatively high income levels, an engaged Class 2 (29.1%, $N = 2834$) that exhibits the largest proportion of White students and relatively equal levels of females and males, a moderately engaged Class 3 (23.1%, $N = 2249$) with lower levels of income and higher proportions of males than classes 1 and 2, a disengaged Class 4 (11.8%, $N = 1153$) that is largely male, has a high proportion of students from the southern US, and has the highest proportion of African-Americans than the other classes, and finally a disengaged Class 5 (4.4%, $N = 429$) characterized by lower income levels and a substantial proportion of Hispanics (66%) and the West region of the US compared to the other classes.

3.2. Prediction of class membership

Several of the variables in the model, including those of theoretical interest which we discuss in more detail below, are significant predictors of class membership. Table 3 displays the relative risk ratios and standard errors for each predictor of class membership for our first model that uses the entire sample of counties available. The reference category is Class 1, the most highly engaged group of students. Classes 4 and 5 are the most highly disengaged groups. Demographic predictors indicate that males, relative to Class 1, are at greater risk of being members of the four other classes but particularly Class 4 (RR = 4.27, SE = 0.591, $p < .001$). With respect to race and ethnicity, African-American is a significant predictor of membership in class 4 (RR = 2.57, SE = 0.606, $p < .001$) and Hispanic ethnicity is a powerful predictor of Class 5 membership (RR = 8.58, SE = 2.23, $p < .001$). High SES is significantly less likely to be associated with Classes 3–5 compared to Class 1. With respect to school characteristics, attending a magnet predicted increases risk for Class 4 (RR = 2.08, SE = 0.506, $p < .01$) and the number of public schools per county predicted decreases risk for membership in Class 3 (RR = 0.98, SE = 0.008, $p < .05$) and Class 5 (RR = 0.93, SE = 0.015, $p < .001$).

Table 4 shows the results from the restricted analysis of schools in large or mid-sized cities. In this model, male gender is only predictive of membership in Classes 3 and 4 while the strong effect of African-American and Hispanic remains for Classes 4 and 5, respectively. SES effects are nearly identical to model one. However, school variable effects are more pronounced in this model. For Class 3, enrollment in private school (RR = 2.61, SE = 1.24, $p < .05$) predicted membership. With respect to Class 4, enrolled in magnet school (RR = 1.98, SE = 0.605, $p < .05$) increases risk while Catholic school enrollment (RR = 0.10, SE = 0.046, $p < .001$) and number of charter schools (RR = 0.69, SE = 0.117, $p < .05$) are significant predictors of decreased risk. Finally, being enrolled in private school (RR = 0.00, SE = 0.000, $p < .001$), number of private schools (RR = 1.08, SE = 0.031, $p < .01$), and as in

model one, number of public schools (RR = 0.92, SE = 0.020, $p < .001$), were predictive of membership in Class 5.

4. Discussion

The analysis shows that individual student characteristics are important determinants of placement on the student engagement/disengagement risk spectrum as other studies. We are primarily concerned with the effect that aggregate competition or choice has on student engagement, and we observe that the amount of choice found in a child's elementary school years influences eighth grade engagement. In general, the findings are in line with our expectations. In the full sample of schools, we see that the amount of competition in the public sector leads to higher levels of engagement. That is, students are less likely to be found in the relatively less engaged Class 3 and the highly disengaged Class 5, where there are more regular public schools. Since we also controlled for eighth grade class size this does not simply reflect that areas with many schools have fewer students which produces more engaged students. Looking at the relative risk ratio for this variable, we can see that one additional public school per 10,000 students in the county reduces the relative risk that a student will be in the severely disengaged Class 5 by nearly 7% and the relative risk that a student will be in Class 3 by nearly 2%. Because the average number of public schools per 10,000 is almost 23, we can say that adding a 24th school would have this effect, on average. In the full sample none of the other choice variables are significant. This is not surprising considering that most students (particularly outside of urban areas) attend the regular public school, there are few charters in many areas, and private schools are too expensive for most at-risk students.

School choice reforms are generally focused on failing urban districts and when we restrict our analysis to schools located in central cities we see the same result for the number of regular public schools variable. We also observe, however, that the number of charter schools has a positive effect on student engagement. An additional charter school reduces the relative risk that a student will be in Class 4 (a highly disengaged group) by nearly 31%. This effect is not quite as large as it initially appears because adding one additional charter school is a major increase in the number of charters, even in large and mid-size cities the mean number of charters per 10,000 students in the county was only 0.56. Nevertheless, charters appear to improve student engagement. Though there are relatively few charter schools compared to regular publics or privates even in cities, they appear to have a positive effect on engagement.

In contrast to the beneficial effects of choice in the public sector, an additional private school actually increases the relative risk that a student will be in Class 5 (a highly disengaged class) by over 8%. We did not anticipate much of an effect either way for private school choice since relatively fewer at-risk students are able to attend them relative to public schools. The negative effect may reflect that when the demand for more choice in the school system is satisfied by private schools this prevents the emergence of more options within the public sector (Glomm et al., 2005, p. 454), which results in net negative consequences for engagement since these choices are not open to many of the most at-risk students and therefore have a minimal impact on matching. More research into the micro-level decision-making processes of families across different choice contexts should be conducted before we have complete confidence in this interpretation. Nevertheless, based on the analysis, we can safely conclude that choice in the public sector generally has positive effects on student engagement.

4.1. Individual school choice and student engagement

Though we are primarily concerned with the effect of the choice context, our results do provide some information about the potential effect of individual choices. The fact that more choice in the public sector leads to higher levels of aggregate engagement does not imply that students attending public schools are more highly engaged. In the entire sample of schools the only school type effect we observe is that magnet students have lower levels of engagement than students at other types of schools; it predicts membership in Class 2 and the highly disengaged Class 4. Generally, we expect students to choose magnets because of the clear focus, which might lead to higher engagement for students at some types of specialized schools (Cullen et al., 2005, pp. 746–747). However, as Coleman and Hoffer (1987, p. 9) note, non-neighborhood schools without a strong sense of community may make students even more dependent on their individual resources for success, which can lead to problems for students without such resources, and most magnets are located in struggling urban districts.

In the restricted urban school sample we see that magnet school attendance still predicts membership in Class 4, but not class 2. There is no significant relationship between attending a charter school and membership in one of the classes indicating that charter school students are not distinguishable from regular public school students. This is not necessarily surprising since if more choice leads to more efficient student sorting, both those attending regular public schools (whom in some areas might have attended charters but opted not to) and those attending public schools of choice are likely to be more highly engaged in high choice areas compared to students in low choice areas.

As expected, we also see that students attending Catholic schools are less likely to be in one of the most highly disengaged classes. Specifically, Catholic school attendance is associated with a reduction in relative risk of being in Class 4 of almost 90%. This beneficial effect of Catholic schools in urban areas, but not in the entire sample, supports previous research demonstrating that the greatest benefit of Catholic schools accrues to poor, minority students in urban areas (Bryk et al., 1993, pp. 262–274). The results for non-Catholic privates are mixed. On the one hand, students attending non-Catholic private schools are about 2.5 times more likely to be found in Class 3, a less highly engaged group, than Class 1, which was the reference category and most highly engaged group. On the other hand, students attending non-Catholic private schools, many of which are also religious schools, are about four times less likely to be in Class 5. It appears that attending a non-Catholic private school increases the likelihood of being modestly disengaged but reduces the likelihood of being severely disengaged. It should be noted that our research design does not allow us to distinguish entirely between school and self-selection effects. Nevertheless, our findings are largely in line with previous research showing that Catholic school students in urban areas are more engaged on average (Bryk et al., 1993, pp. 270–288).

5. Conclusions

We have produced one of the first studies of the effect of competition or availability of choice on student engagement in the relatively early grades using a large, national data set. We find that more choice in the public sector is related to higher levels of engagement, or in our study's parlance, less likelihood of membership in a highly disengaged class. This finding is consistent with more efficient sorting leading to higher levels of engagement. It should be clear, however, that we do not directly examine the sorting process so future research should delve into the micro-level causal process undergirding these aggregate findings. For example, is more choice more important in certain areas or for certain types of people? We also find some support for expectations regarding the differences between choice in the public and private sectors. More regular public school choice leads to more

highly engaged students. A similar effect is found for charter schools in central cities. In contrast, more choice in the private sector actually leads to an increased risk of membership in a highly disengaged group in large cities. This shows that it is not only the amount of choice, but also the mix of choices available that matters.

The fact that more choices in the public sector in the elementary years leads to higher levels of engagement in eighth grade does not mean that students attending public schools necessarily have higher levels of engagement than students attending private schools. It simply means that students attending public schools are more engaged in eighth grade when they have more options in elementary school than they are when they have fewer options. Indeed, our data shows that among urban schools, students attending private schools are less likely to belong to a highly disengaged class, and these private schools have fairly large effects (though non-Catholic private schools have mixed effects). Of course, our design does not distinguish between self-selection and actual school effects but these findings fit with the results of previous studies that found poorer, urban students benefit most from attending Catholic schools (Bryk et al., 1993, pp. 270–288).

Despite these positive individual effects, choice in the private sector does not have broader benefits presumably because relatively fewer students can or want to seriously consider private schools which limits the matching effect. Vouchers are advocated by some because they expand access to private schools, perhaps enabling them to have a more general effect on the matching process and enabling more students to reap the benefits of private school education. Yet, non-Catholic private schools actually have mixed effects on student engagement. It also seems a distinct possibility that a large influx of students lacking any strong attachment to or preference for Catholic education fundamentally alters the nature of those student bodies and schools in a way that undermines their distinct communal structure and effectiveness.

Given the preliminary nature of research into the link between school choice and student engagement we must be cautious in drawing out policy implications from our findings. First, the indicators of engagement that were used did not derive from any established engagement measure. As such, this measurement approach bears caution and findings should be interpreted in light of this limitation. Second, though we control for a number of plausible alternative determinants of engagement and find that more choices is associated with more engagement, future research should examine how a larger number of choices affects individual school decisions more, as noted above. Nevertheless, our evidence is consistent with the argument that more choices lead to the more efficient matching of students and schools. In the entire sample and urban areas, more choice in the regular public sector improves student engagement. Regular public schools may offer the advantage of providing choice, while permitting schools to be embedded in the local community, which may provide some benefits for student engagement (Coleman & Hoffer, 1987, p. 7). In central cities, charters may produce more efficient matching of students and schools, producing more highly engaged students. These results do not necessarily imply that we should create more regular public or charter schools since the benefits from more choice must be weighed against the costs associated with expanding choice, such as more racial/ethnic stratification (Bischoff, 2008, p. 207). This underscores again that reforming the school system involves difficult tradeoffs that must be acknowledged by policymakers.

Acknowledgments

Appendix A. Indicators of school engagement used to derive latent classes

Parent Report

1. Has your child ever had an in- or out-of-school suspension?
   - □ NO = 0
   - □ YES = 1

2. How many times was your child suspended?
   - □ 0
   - □ 1
   - □ 2 or more

3. How frequently does your child attend school?
   - □ Never = 0
   - □ Rarely = 1
   - □ Sometimes = 2
   - □ Frequently = 3

4. Has your child been diagnosed with a learning or behavioral disorder such as ADD, ADHD, dyslexia, autism, or learning disability by a professional?
   - □ NO = 0
   - □ YES = 1

5. Is there a place set aside in your home for your child to do homework?
   - □ NO = 0
   - □ YES = 1

6. During the past year, how frequently did you or another adult family member and your child work on homework or school projects together?
   - □ Never = 0
   - □ Rarely = 1
   - □ Sometimes = 2
   - □ Frequently = 3

7. Are there family rules with respect to the number of hours of daily or weekly television viewing?
   - □ NO = 0
   - □ YES = 1

Student Report

8. In the past year, have you had a tutor or mentor to help with reading skills?
   - □ NO = 0
   - □ YES = 1

9. In the past year, have you had a tutor or mentor to help with math skills?
   - □ NO = 0
   - □ YES = 1

10. In the past year, have you had a tutor or mentor to help with science skills?
    - □ NO = 0
    - □ YES = 1

11. This school year, how often did you feel like you fit in at your school?
    - □ Never = 0
    - □ Rarely = 1
    - □ Sometimes = 2
    - □ Frequently = 3

12. This school year, how often did you feel close to classmates at your school?
    - □ Never = 0
    - □ Rarely = 1
    - □ Sometimes = 2
    - □ Frequently = 3

13. This school year, how often did you feel close to teachers at your school?
    - □ Never = 0
    - □ Rarely = 1
    - □ Sometimes = 2
    - □ Frequently = 3

14. Among your close friends, how important is it that they: (Range 0-9)

		Not important	Somewhat important	Very important
a.	Attend class regularly?	□	□	□
b.	Get good grades?	□	□	□
c.	Continue their education past high school?	□	□	□

Appendix B. Types of schools per 10,000 in the sample

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Table 1

Model fit statistics for latent class analysis.[a]

# classes	Log-likelihood	BIC	Entropy	Error
1-Cluster	−92933.16	186132.61	–	0.0000
2-Cluster	−89843.59	180100.40	73.5	0.0566
3-Cluster	−78860.17	158280.48	84.5	0.0650
4-Cluster	−76893.66	154494.36	86.1	0.0868
5-Cluster [b]	**− 69035.63**	**138925.23**	**92.3**	**0.0485**

[a]Models were run using 10 random starts with 50 iterations.

[b]Bolded class represents selected model.

Table 2

Descriptive characteristics of the five-class solution.

Covariates	Class 1 (high engagement, N= 3060) %, mean (SD)	Class 2 (engaged, N= 2834) %, mean (SD)	Class 3 (moderately engaged, N= 2249) %, mean (SD)	Class 4 (low engagement males, N= 1153) %, mean (SD)	Class 5 (low engagement hispanics, N= 429) %, mean (SD)	χ^2
Census region						
Northeast	18.7	20.3	17.1	15.9	14.8	259.75 ***
Midwest	28.4	29.8	29.5	23.7	10.5	
South	31.4	31.5	31.1	42.5	29.0	
West	21.0	18.1	22.0	16.6	44.8	
Gender						
Female	58.3	51.1	45.0	28.6	51.5	318.30***
Male	41.7	48.9	55.0	71.4	48.5	
Race						
White	64.2	68.2	61.4	51.3	13.3	1161.15***
African–American	9.9	8.0	8.7	22.3	4.7	
Hispanic	14.0	13.8	18.0	16.5	66.9	
Asian	7.1	5.0	5.2	2.4	12.1	
Other[a]	4.8	4.9	6.7	7.5	3.1	
SES						
First quintile	11.2	10.2	15.8	25.0	58.7	1014.71***
Second quintile	16.0	17.4	21.4	26.2	21.7	
Third quintile	19.1	20.9	20.7	23.1	8.2	
Fourth quintile	23.5	22.7	20.2	13.9	6.5	
Fifth quintile	30.1	28.8	21.9	11.8	4.9	
Education						
Public school	79.3	79.4	84.4	92.4	92.0	181.22***
Private school	20.2	20.3	15.4	6.3	7.0	
Total school enrollment						
0–149	3.5	3.4	4.2	4.5	2.8	112.99***
150–299	13.9	14.7	12.1	9.5	8.2	

Covariates	Class 1 (high engagement, $N=3060$) %, mean (SD)	Class 2 (engaged, $N=2834$) %, mean (SD)	Class 3 (moderately engaged, $N=2249$) %, mean (SD)	Class 4 (low engagement males, $N=1153$) %, mean (SD)	Class 5 (low engagement hispanics, $N=429$) %, mean (SD)	χ^2
300–499	20.5	20.1	21.9	17.4	10.5	
500–749	25.8	24.8	25.8	28.5	22.3	
750 and above	35.7	36.6	35.7	38.7	55.1	

[a]Includes Native Hawaiian, Pacific Islander, American Indian, and multiracial.

***
P-value < 001.

Table 3

Results of multinomial logistic regression predicting class membership in all schools.

Variables	Class 2 RR (SE)	Class 3 RR (SE)	Class 4 RR (SE)	Class 5 RR (SE)
Male	1.32[*](0.161)	1.90[***](0.231)	4.27[***](0.591)	2.44[***](0.527)
African-American	0.76 (0.149)	0.85 (0.200)	2.57[***](0.606)	1.26 (0.918)
Hispanic	0.95 (0.155)	1.17 (0.223)	1.07 (0.237)	8.58[***](2.23)
SES (highest quintile)	0.92 (0.046)	0.78[***](0.041)	0.66[***](0.040)	0.49[***](0.054)
Standard math	1.01[*](0.006)	1.01 (0.007)	1.00 (0.007)	1.00 (0.012)
8th enrollment	1.00 (0.026)	1.01 (0.028)	1.06 (0.041)	1.04 (0.046)
Pub choice school	0.86 (0.148)	1.06 (0.157)	0.90 (0.169)	0.74 (0.164)
Magnet school	1.72 (0.485)	1.14 (0.424)	2.08[**](0.506)	1.46 (0.564)
Catholic School	0.99 (0.261)	0.74 (0.211)	0.569 (0.322)	0.73 (0.365)
Other private school	1.11 (0.290)	0.91 (0.292)	1.22 (0.541)	0.50 (0.384)
# of private schools	1.00 (0.009)	1.01 (0.010)	0.99 (0.012)	1.02 (0.024)
# of charter school	0.88 (0.071)	0.92 (0.089)	0.93 (0.107)	1.14 (0.152)
# of public schools	1.00 (0.006)	0.98[*](0.008)	1.00 (0.09)	0.93[***](0.015)

Note: Reference category = class 1. RR, relative risk ratio; SE, standard error. Number (#) of private, charter and public schools is per 10,000 residents in a county.

[*] $p < .05$.

[**] $p < .01$.

[***] $p < .001$

Table 4

Results of multinomial logistic regression predicting class membership in urban schools.

Variables	Class 2 RR (SE)	Class 3 RR (SE)	Class 4 RR (SE)	Class 5 RR (SE)
Male	1.19 (0.253)	1.95 [**] (0.408)	3.75 [***] (0.864)	1.65 (0.455)
African-American	0.68 (0.211)	1.23 (0.390)	2.85 [*] (1.155)	0.29 (0.216)
Hispanic	0.95 (0.257)	1.79 (0.459)	0.90 (0.342)	5.12 [***] (2.06)
SES (highest quintile)	0.97 (0.080)	0.78 [**] (0.066)	0.63 [***] (0.065)	0.39 [***] (0.062)
Standard math	1.01 (0.011)	1.00 (0.011)	1.00 (0.013)	1.03 (0.014)
8th enrollment	0.97 (0.060)	1.08 (0.052)	0.96 (0.043)	0.93 (0.069)
Pub choice school	0.86 (0.270)	0.96 (0.244)	0.60 (0.196)	0.66 (0.221)
Magnet school	1.63 (0.519)	1.07 (0.459)	1.98 [*] (0.605)	1.45 (0.672)
Catholic School	0.83 (0.480)	1.15 (0.532)	0.10 [***] (0.046)	0.42 (0.311)
Private school	1.85 (0.968)	2.61 [*] (1.24)	0.74 (0.367)	4.06 [***] (0.00)
# of private schools	0.98 (0.020)	1.02 (0.026)	0.97 (0.029)	1.08 [**] (0.031)
# of charter school	0.92 (0.116)	0.99 (0.151)	0.69 [*] (0.117)	1.12 (0.181)
# of public schools	0.99 (0.017)	0.97 (0.016)	1.01 (0.016)	0.92 [***] (0.020)

Note: Reference category = class 1. RR, relative risk ratio; SE, standard error. Number (#) of private, charter and public schools is per 10,000 residents in a county.

[*] $p < .05$.

[**] $p < .01$.

[***] $p < .001$

	Whole sample mean (standard deviation)	Large cities mean (standard deviation)
Regular public schools per 10,000	22.86 (7.99)	21.42 (7.11)
Public choice schools per 10,000	0.40 (0.64)	0.56 (0.76)
Private schools per 10,000	12.23 (6.18)	11.26 (4.89)