The opportunity structure of school segregation

Maria Brandén[1,2] & Magnus Bygren[1,2,3]

[1] Department of Sociology, Stockholm University
[2] Institute for Analytical Sociology, Linköping University
[3] Institute for Futures Studies, Stockholm

Introduction

Individual level preferences and the choices they lead to shape the distribution of groups across space. This is evident not least when it comes to segregation patterns where even minor preferences in favor of, or opposing, a certain group of individuals can give rise to highly segregated environments, as elegantly demonstrated by Schelling (1978). In this study, we highlight one crucial, but often neglected link in the association between individual preferences and segregation outcomes, namely the opportunity structure, in terms of the structural possibilities to act on a certain preference (cf. Blau 1994; White 1970). Our idea is very simple: People have a latent wish to segregate but cannot make segregating choices unless such opportunities emerge. Thus, when opportunities to segregate increase, these latent demands turn into realized choices, which in turn increases segregation. The opportunity structure thereby filters desires, sometimes letting them influence segregation, sometimes not.

Our argument is general and may be applied to different kinds of segregation processes. In the present study we apply it to segregation in schools, using Swedish register data on all children attending grades 1 to 9 (age 7-15) for the years 2008-2012. We examine how the emergence of a new school in an area (i.e. a change in the local opportunity structure) create segregating flows of students from old schools into the new school, and subsequent flows from other old schools into the vacant slots that became available as students left for the new school. We pay particular attention to how the students who leave a school differ from those who stay, and how these processes thus affect school segregation. Opportunities to segregate vary across time and space. Examining how such variation affect individual level choices provide us with a clear-cut illustration of fundamental social mechanisms in the interplay between structural opportunities, purposeful choice, and segregation (cf. Sampson 2011).

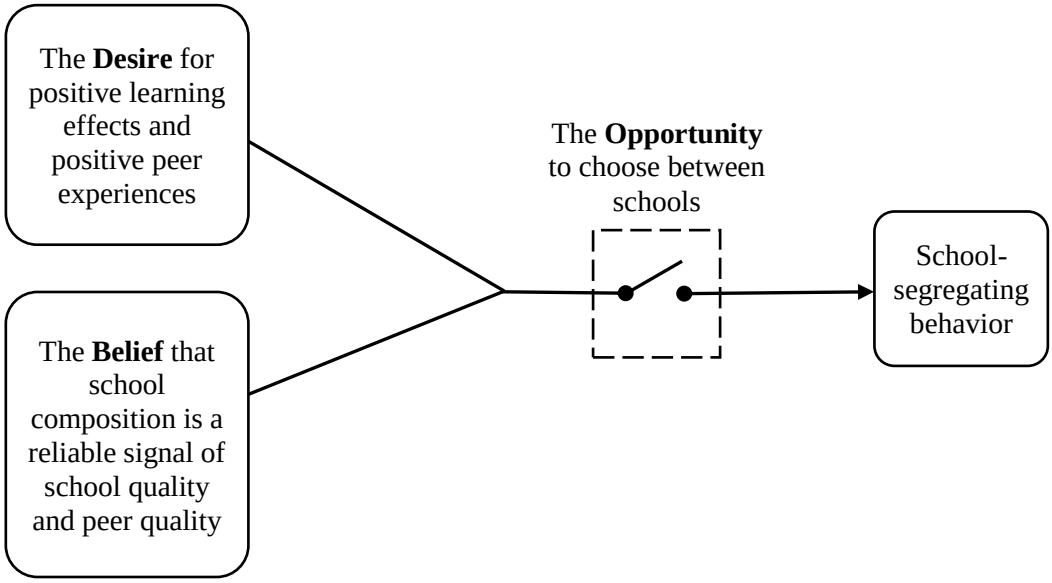
Opportunity structures

Opportunity structures may be defined generally as exogenous factors which limit or empower actors in their striving for certain goals, and these structures are shaped by the way the society or an institution is organized.[1] Opportunity structures have been conceptualized in different ways, but always with the intent to capture enabling and constraining structures faced by individuals striving for certain goals (cf. Blau 1993; White 1970). We apply this concept in a research area in which it has been absent, namely horizontal segregation research. In line with the seminal contribution by White (1970), we adopt an approach defining these structures as being made up by institutionally defined units between which individuals move. For the present case, these units are limited in size but may be occupied by many individuals, and they are the 'bins' into which individuals segregate, e.g. schools, occupations, or neighborhoods. They are surrounded by borders, across which there is a cost on social interaction, to a certain degree insulating its inhabitants from interaction with outsiders. We may think of these units as being surrounded by physical obstacles (walls, water, highways), institutional obstacles (organizational borders, cultural barriers), or both.

[1] The concept can be traced back to Cloward & Ohlin (1960), who built on Merton's (1938) structural strain theory to develop a theory capable of explaining group differences in delinquent behaviors, with group differences in the availability of legitimate opportunity structures.

An empirically grounded theoretical model

In order to properly understand how a macro outcome – here segregation – is brought about, it is essential to link the micro and macro levels to one another. In terms of micro motives and macro opportunities, we summarize the core ideas behind our approach in the figure below.



Desires: Desires may be defined as 'a wish or want of something to happen (or not to happen)' (Hedström 2005). Applied to school choice, parents tend to desire to i) minimize the home-to-school travel distance; ii) have their children make friends in school, and, perhaps more importantly, avoid them being bullied (e.g., Hastings, Kane & Staiger 2005; Burgess et al. 2015); and iii) expose their children to positive learning effects.

Beliefs: Beliefs concern notions about the world held to be true. Parents believe that a school's socioeconomic and ethnic composition can be used to infer i) a school's learning effects as well as ii) a school's peer quality. That is, there is a school quality aspect and a peer quality aspect of composition. The social aspect is that parents believe that peers that are socially similar to their child are better mating candidates than children that are socially dissimilar.

Opportunities: The possibility for realizing unmet desires and beliefs, are contingent on the available opportunity structure. *This means that unless the 'opportunity switch' in Figure 1 is activated, desires and beliefs will have no impact on actual choices.* Applied to schools, the opportunity to realize a desired socio-demographic composition varies with the supply of nearby schools with such a composition. Because of desire i) the set of schools parents consider placing their child in is geographically constrained. If there are no alternative schools to choose, obviously there are no opportunities to realize an unmet desire as far as the composition of a school is concerned. Thus, segregation levels will not be affected by parental choices. However, when school choice opportunities arise – i.e., when the local school choice set expands – parents have the opportunity to place their child in a school with a potentially more 'appropriate' composition, thereby segregating themselves from less desirable schools.

Research questions

We pose 3 general research questions, aimed at addressing how a change in the local opportunity structure can have far reaching consequences on individual choices and future local opportunity structures.

RQ1. How does the emergence of a new school in a school-area affect outflows of students from old schools into this new school? How do these students differ from the students remaining in the sender-school?

RQ2. How does this outflow affect the inflow of new students into old schools, through the vacancy chains they give rise to? How do these students differ from the students remaining in the sender-school and from the students in the receiver-school?

RQ3. How do flows such as those depicted in RQ1 and RQ2 affect segregation levels?

Data and variables

For our analyses we use Swedish population register data for the years 2008 to 2012, including all students who attended 1st to 9th grade in any of these years. We have unique identifiers of all students and their respective schools each year, which enables us to link the locations of all schools and students (with 100 by 100 square meter accuracy) and to track flows of students between schools. For schools, we also know if a school is public or an independent charter school, and for students, we know, for instance, immigrant status (own and parents'), parents' education, gender and year of birth.

We focus on changes in the realistic opportunity set by examining those instances when a new school emerges in a school area. We define these school areas by assigning each school to be a focal centroid school in a school area consisting of this school and all other schools located within the same municipality and within 1.6 kilometers of the focal school. Our school areas are hence 3.2 kilometers in diameter. Schools within such an area are likely to compete for the same stock of students, as children can usually only choose schools within their home municipality, and as 1.6 kilometers is the median distance 9th graders travel to school. Depending on municipality, 4-5 kilometers is usually considered to be the upper boundary of walking distance to school for students in grade 7-9 (this cut-off is used in decisions on eligibility for publicly funded transportation).

We focus on when a new school emerges within such a school area and examine how this generates flows of students with certain characteristics into this school, subsequent flows between other schools with vacant slots, and in the end, segregation levels within this area.

Individual level variables

We examine segregation, and individual background, across two dimensions: parents' immigrant status and SES-background. Immigrant status distinguishes between (1) two foreign-born parents (including Swedish born children of immigrants) and (2) Swedish background. SES-background is measured by the highest education achieved by any of the child's parents, and is dichotomized to distinguish between children whose parents have at most post-secondary education (around 12 years) (gymnasium) and children whose parents have at least some university education.

Segregation measurement

Our measure of segregation is a variant of the dissimilarity index, *D*, called the index of systematic dissimilarity, $\widehat{D}$ (Carrington & Troske 1997). Unlike *D* it adjusts for the upward bias in segregation indices when the units across which segregation is analyzed are small, or when the minority share is small. Using a segregation measure which is robust to the size distribution of schools as well as the size of the minority share could be important as an addition of a school to a school area simply may

decrease the average number of students across schools in the area – thereby increasing the upward bias in measured segregation.

Analytical strategy

To properly understand how school segregation is maintained and changed by the interplay between parental desires, composition and school choice opportunities, we will shift our analysis between the macro and the micro level. To reveal parents' desires, we will focus our attention on those instances when the set of schools in an area change, that is, when there occur changes in the local school choice opportunities faced by parents and their children.

Initially, we examine how children and parents react to a change in the local opportunity set, that is, the micro mechanisms that potentially could generate macro changes. We do this by examining choice behavior of students/parents when a new school establishes in a school area. We examine how the schools which loses students to newly established schools differ from schools who remain less affected, and how the students who leave these schools differ from the students who remain, by using discrete choice models. We pay particular attention to threshold effects in order to identify potential tipping points, for instance in terms of the share of foreign born children in a school.

Next, we create transition matrices to examine how these newly generated flows create vacancies in the already existing schools, and how this in turn affect the inflow of students into these schools. Similar to above, we examine how the schools which loses students to the schools with available slots differ from schools without such outflows, and how the students who leave these schools differ from the students who remain.

Finally, we examine segregation levels in school areas, and compare it to the counterfactual segregation levels which would have been, had not a new school emerged in the area. This we do by comparing the de facto segregation levels to the segregation levels we would have observed if all students were assigned to the school they attended initially (or the school that their original school mates are now attending).

Preliminary results

No preliminary results available

References

Blau, P. 1994. *Structural Contexts of Opportunities*. Chicago & London: University of Chicago Press.

Burgess, S., Greaves, E., Vignoles, A. & Wilson, D. 2015. "What Parents Want: School Preferences and School Choice" *Economic Journal*, 125:1262–1289.

Carrington, W. J., & Troske, K. R. 1997. "On Measuring Segregation in Samples with Small Units" *Journal of Business & Economic Statistics*, 15:402-409

Cloward, R. A. & Ohlin, L. E. 1960. *Delinquency and Opportunity – A Theory of Delinquent Gangs*. New York: The Free Press.

Hastings, J. S., Kane, T. J. & Staiger, D. O. 2005. "Parental Preferences and School Competition: Evidence from a Public School Choice Program" NBER Working Paper No. 11805.

Hedström, P. 2005. "Dissecting the Social. On the Principles of Analytical Sociology" Cambridge University Press.

Merton, R. 1938. "Social Structure and Anomie" *American Sociological Review*. 3: 672–682

Sampson, R. 2011. "Neighborhood effects, causal mechanisms and the social structure of the city" in Demeulenaere, P (ed.), *Analytical Sociology and Social Mechanisms*, Cambridge University Press.

Schelling, T. 1978. *Micromotives and Macrobehavior*. Toronto: W.W. Norton & Co.

White, H. 1970. *Chains of Opportunity: System Models of Mobility in Organizations*. Cambridge, MA: Harvard University Press.