Socio-economic background and educational inequality in networks

Keywords: social networks, educational aspirations, SAOM, segregation

Extended Abstract

At earlier age, children tend to create social ties based on homophily in apparent characteristics like age, gender, or ethnicity. However, some differences become more apparent with age, creating grounds for new types of homophilious preferences. One of such characteristics is socio-economic background (SEB). *Does segregation by SEB in classroom networks increase over time?*

Later in their education, students might start forming their ties more strategically, connecting with others with similar level of resources and opportunities. Interactions with others from the same or more advantageous SEB might be seen as more beneficial. Another strategic reason to connect to others similar in SEB is that later in life these ties are more likely to 'survive', as these alters are more likely to achieve similar levels of education and income, creating more grounds for homophily. The parents of students might also translate their preferences for friends with certain characteristics (Smith, Maas & van Tubergen, 2015) and thus contribute to the increasing segregation.

The second goal of this study is to investigate *the effect of socio-economic background on robustness of students' academic aspirations and academic performance.*

Parents' social capital translates into children's academic success; children adopt educational and career aspirations from their parents and benefit from their connections, experience, and advice. Therefore, their academic aspirations might form and persist independently from their actual performance and cognitive ability. It is known that in school networks, both academic aspirations and academic performance can be influenced by one's peers (Ortiz, Hoyos, & López, 2004; Blansky et al., 2013) and that students often cluster by these characteristics (Raabe & Wölfer, 2019). Therefore, it is important to disentangle selection and influence effects for academic aspirations and academic performance: do school children adjust their aspirations in accordance with their peers, or do they create ties to classmates with similar grades/aspirations? I hypothesize that children with higher socio-economic background show weaker influence of peers on their academic aspirations than children of lower SEB. Because of their parents' resources and expectations, children with higher SEB are expected to be more persistent in their educational aspirations.

The first two waves of CILS4EU dataset (Kalter et al., 2016) collected in German schools are used in this paper. These data were collected in years 2010-2012 and contain information on behaviors, attitudes, and networks of schoolchildren.

For my first research question, I plan to use temporal exponential random graph modelling (TERGM). TERGMs are a statistical tool used to analyze the evolution of social networks over time. They are an extension of Exponential Random Graph Models (ERGMs) and additionally allow for the inclusion of time-varying covariates.

TERGMs are well-suited for studying segregation in networks because they can capture the dynamics of tie formation and dissolution over time. TERGMs can account for different

forms of segregation, such as homophily and clustering and can be used to test the significance of the observed segregation patterns, and whether they are the result of random variation or an underlying process.

For my second research question, I use stochastic actor-oriented modelling (SAOM) to disentangle influence and selection effects for two types of behavior: academic aspirations and academic performance. SAOM separates selection and influence processes to examine how social actors select network ties based on their preferences and how these network ties are influenced by the existing network structure.

Academic aspirations are measured by the highest planned and aspired levels of education, academic performance – by the GPA. Socio-economic background, measured by parents' characteristics, is included as a moderator. I expect smaller influence effect on academic aspirations than on academic performance.

This study aims to contribute to a better understanding of the role of SEB in shaping social ties and academic outcomes. Social capital plays an important role in achieving success in various domains, and therefore network processes in schools might explain the emergence of inequality later in life. The findings of this study can have the potential to inform interventions and policies aimed at promoting educational equity and social mobility.

References

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