Ethnic segregation of friendship networks in school

A paper by Lars Leszczensky, and Sebastian Pink
Mannheim Centre for European Social Research

Lars Leszczensky
Researcher at University of Mannheim
Master’s at Graduate School of Economic and Social Sciences

Sebastian Pink
Ph.D. Student of Social and Behavioral Sciences, University of Mannheim
Existing Literature

- Shows that ethnic segregation is a persistent feature of adolescent networks
- Shows that segregation causes many issues
  - Developing language proficiency
  - Decreases value in labor market
- Shows that childhood segregation is reinforced as an adult
- Only looks at classroom-based school networks
The Boundary Specification Problem

- How is the boundary of a friendship defined?
- Students meet outside of classrooms
- Most school-based network analysis is done on classroom level
- Little research on how the boundary affects ethnic composition of networks
H1 - Ethnic homophily in low and high cost situations

- People befriend those who are similar to them
- Same-ethnic friendships are lower cost, and more rewarding
- Ethnic homophily is more pronounced in high cost situations
H2 - Classroom and grade level networks as low and high cost situations

- Classroom friendships are extremely low cost
  - The classroom serves as a focal point
- Grade level friendships are high cost
  - Fewer opportunities to meet, less common experiences
H3 - Ethnic homophily is particularly pronounced for grade-level friendships

- This would mean the degree to which ethnic segregation is measured in schools is systematically underestimated
Data

- Two waves of panel data, taken May 2013 and Feb 2014
- Approximately 2000 students in grades 5, 6, and 7, from 9 German schools
- Friendship networks created by asking to nominate up to 10 best friends
- Average classroom = 26 students
- Average grade = 85 students
<table>
<thead>
<tr>
<th>Region</th>
<th>Wave 1 Within</th>
<th>Wave 1 Between</th>
<th>Wave 2 Within</th>
<th>Wave 2 Between</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>47.8</td>
<td>56.8</td>
<td>47.2</td>
<td>52.8</td>
</tr>
<tr>
<td>Turkey</td>
<td>51.0</td>
<td>66.4</td>
<td>50.6</td>
<td>66.9</td>
</tr>
<tr>
<td>Poland</td>
<td>7.6</td>
<td>9.0</td>
<td>8.3</td>
<td>14.8</td>
</tr>
<tr>
<td>Southern European</td>
<td>8.0</td>
<td>13.0</td>
<td>8.9</td>
<td>15.6</td>
</tr>
<tr>
<td>Former Soviet Union</td>
<td>21.7</td>
<td>26.0</td>
<td>21.2</td>
<td>30.7</td>
</tr>
<tr>
<td>Former Yugoslavia</td>
<td>8.7</td>
<td>9.1</td>
<td>8.8</td>
<td>13.4</td>
</tr>
<tr>
<td>Near East</td>
<td>24.1</td>
<td>24.9</td>
<td>22.0</td>
<td>24.5</td>
</tr>
<tr>
<td>Non-Western</td>
<td>2.7</td>
<td>6.6</td>
<td>1.8</td>
<td>7.5</td>
</tr>
<tr>
<td>Western</td>
<td>4.8</td>
<td>0.0</td>
<td>7.6</td>
<td>5.0</td>
</tr>
<tr>
<td>Number of students</td>
<td>922</td>
<td></td>
<td>959</td>
<td></td>
</tr>
</tbody>
</table>
Stochastic Actor Oriented Models

- Useful for “waves” of observations
- Models change from the perspective of actors (nodes)
- Assume micro-steps cause changes
- SAOM doesn’t assume the network is in a temporary state of equilibrium (like ERGM)
Stochastic Actor Oriented Models

- Allows easier controlling for structural components of the network (reciprocity, transitivity)
- Controlled for absence of opportunity
- Controlled for relative size of ethnic groups
Variables

- Ethnic Background
- Same ethnic background
- Sex
- Different classroom
- Same neighborhood (ethnic enclaves)
- Same elementary school
Model 1 Results

- Same elementary school has an effect
- Same neighborhood does not, this speaks (somewhat) against ethnic enclaves
- Same ethnic background
- Different classroom has a strong negative effect

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean est.</td>
</tr>
<tr>
<td>Outdegree</td>
<td>-2.02</td>
</tr>
<tr>
<td>Reciprocity</td>
<td>1.02</td>
</tr>
<tr>
<td>Transitive triplets</td>
<td>0.21</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td>Alter</td>
<td>0.07</td>
</tr>
<tr>
<td>Ego</td>
<td>-0.10</td>
</tr>
<tr>
<td>Same</td>
<td>0.65</td>
</tr>
<tr>
<td>Same elementary school</td>
<td>0.15</td>
</tr>
<tr>
<td>Same neighborhood</td>
<td>0.01</td>
</tr>
<tr>
<td>Same ethnic background</td>
<td>0.16</td>
</tr>
<tr>
<td>Different classroom</td>
<td>-0.76</td>
</tr>
<tr>
<td>Different classroom × same ethnic background</td>
<td></td>
</tr>
</tbody>
</table>
| Number of grades         | 13
| Number of students       | 1258
Model 2 Results

- Different classroom and having the same ethnic background
- Indication that students preference to have same-ethnic friends between classrooms is more pronounced
- Otherwise “identical” to Model 1
Discussion

- Number of waves was low
- Did not measure individual preferences, or perceived costs
- Maybe ethnicity loses importance in the same classroom?
- Existing research by Snijders
- Detailed geolocated data
- Implications on existing research
- Implications on policy
  - Spreading out ethnic minorities equally in classrooms