# Immigrant Children, School Type, and Their Academic Performance in Highly Differentiated School Systems: Austria, Belgium, and Germany 

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* Submitted for the presentation at the 2012 Annual Meeting of Population Association of America, May 3-5, San Francisco, California. Please direct all correspondence to Hyunjoon Park (hypark@sas.upenn.edu), Associate Professor, Department of Sociology, University of Pennsylvania, 3718 Locust Walk, Philadelphia, PA 19104.


## Immigrant Children, School Type, and Their Academic Performance in Highly Differentiated School Systems: Austria, Belgium, and Germany

A recent international survey of student achievement shows that underachievement of immigrant students relative to their native peers is particularly considerable in such European countries as Austria, Belgium, and Germany that have highly differentiated school systems where students are sorted at early ages into different types of schools with varying curricular and prospect for higher education. Considering between-school tracking as an important mechanism through which immigrant-native gap diverges, we examine whether immigrant disadvantage in attending high-status (academic-oriented) schools is consistently found across Austria, Belgium, and Germany using the PISA data of 15-year-old students. Multinomial logit regression shows that in all three countries, immigrant students, especially first-generation, are more likely to attend lowstatus schools than their native peers, even after controlling for various socioeconomic background variables. Furthermore, we examine the extent to which difference in the likelihood of attending high-status schools accounts for immigrant-native performance gaps in reading, math, and science.

## Introduction

Recent results from the international survey of student performance, Program for International Student Assessment (PISA), reveal substantial underperformance of immigrant students in reading, mathematics, and science, compared to their native counterparts, in several Western countries (OECD 2006). The results, however, also highlight significant cross-national variation in the degree of performance gap between immigrant and native students. Interestingly, some European countries, especially those with highly differentiated school systems like Austria, Belgium, and Germany show particularly profound differences in academic performance between immigrant and native students. The lower achievement of immigrant students than their native peers in those European countries with highly differentiated school systems remains significant even after differences in socioeconomic background are taken into account. This pattern is in sharp contrast to the finding that immigrant and native student show similar levels of performance in Australia and Canada, even before socioeconomic background variables are accounted for. The achievement gap by immigrant status disappears in Sweden and the United States once differences in socioeconomic background are held constant (OECD 2006).

The substantial cross-national variation in the level of academic performance of immigrant students relative to their native peers has recently led to the growing body of research exploring sources of the cross-national variation. After showing significant cross-national variation that remained after family background factors and language skills were controlled, Buchmann and Parrado (2005) inferred that differences across countries in overall immigration policies should matter for between-country differences in the immigrant-native achievement gap. But they did not go far to specify which policies and how they should matter. In addition to
characteristics of destination countries, Level, Dronkers, and Kraaykamp (2006) highlighted the relevance of origin countries in explaining academic performance of immigrant students. They specifically assessed how characteristics of origin countries such as religion, economy, and politics were associated with academic performance of immigrant students.

We recognize the relevance of general characteristics of destination and origin countries in accounting for academic performance of immigrant students. However, by focusing on general features such as immigration policy, religion, or economy of destination and origin countries, previous literature has not paid its full attention to the varying role across countries that schools play in affecting immigrant children's education. Schools are where teaching and learning occur every day. Teaching and learning are affected by the ways in which schools are organized and students are selected into schools, which will ultimately influence educational outcomes of students (Barr and Dreeben 1983; Gamoran 1987). Moreover, as institutional perspective on comparative education highlights, countries significantly vary in their school systems (Kerckhoff 1995, 2001). How do cross-national differences in institutional features of school systems account for cross-national variation in immigrant-native achievement gaps? Can we identify some structural features of school systems that may work better than other systems to facilitate educational integration of immigrant children? Comparing school-related factors that make differences for immigrant children’s education is particularly important for educational policy makers and researchers whose main interests are to develop educational policies rather than overall immigration policies. Although society-level policies for immigration will affect the overall environments of the host country through which immigrant children's education is influenced, it is educational policies that should be directly relevant for educational progress of immigrant children.

In fact, as described earlier, the finding that countries with highly differentiated school systems, where students are sorted into different types of schools usually at early ages, tend to have a larger performance gap between immigrant and native students, seems to suggest the relevance of educational systems. As an attempt to explore how structures features of educational systems may be associated with academic performance of immigrant students relative to their native peers, in this paper we examine the extent to which immigrant students differ from their native peers in the type of schools attended in three countries, Austria, Belgium, and Germany, which are prototypes of highly differentiated systems (cf. Allmendinger 1989). Specifically, we assess how immigrant children are disadvantaged in their likelihood of attending high-status schools (academic-oriented schools such as Gymnasium in Germany) relative to low-status schools (vocational-oriented schools such as Hauptschule in Germany. We, furthermore, investigate the extent to which the lower likelihood of attending high-status schools accounts for differences in test scores between immigrant students and their native peers. Importantly, in addressing the issues, we distinguish immigrant students by generation and country of origin to explore heterogeneity among immigrant students.

## Immigrant Status and School Type

We argue that the greater likelihood of attending low-status schools among immigrant children than among their native peers should be an important mechanism in highly differentiated school systems through which the achievement gap between immigrant and native student diverges. In this paper, we show that a substantially higher likelihood for immigrant children to attend low-status schools than their native peers is consistently found across all the three countries with highly differentiated school systems, even after an extensive list of
socioeconomic background variables is taken into account. Then, we examine the extent to which the higher likelihood of attending low-status schools among immigrant children mediate immigrant-native performance gap.

Studies of US schools, which tend to sort students into different ability groups or classes within schools, found remarkable differences between students attending low and high tracks in the content and type of knowledge, pace of learning, and academic climate, which are responsible for inequality of achievement (Oakes, Gamoran, and Page 1992). Students in low tracks tend to lose ground, while students in high tracks gain more than expected. Moreover, studies provide evidence that minority students and those from poor families are disproportionately found in low-ability groups or classes (Gamoran and Mare 1989).

We expect a similar role of between-school tracking in highly differentiated systems. In such systems, schools significantly differ in the types of curriculum and credential they offer to students. High-track schools primarily prepare students for higher education, while low-track schools emphasize vocational training for entry to labor market. Substantial differences in learning opportunities across schools should be associated with significant performance gaps among students in different types of schools. In short, an important mechanism for the educational disadvantages of immigrant children is through the type of schools attended: immigrant children are more likely to attend low-status schools, which constrains their academic achievement and ultimately results in significant underachievement compared to native children who are more likely to attend high-status schools.

## Data and Variables

Data

In order to compare the likelihood of attending different types of schools between immigrant and native students, we extract data for Austria, Belgium and Germany from an international dataset of Program for International Student Assessment (PISA) conducted in 2003 and 2006. PISA administered comparative literacy tests for 15 -year-olds in schools across more than 40 countries in three key school subjects: reading, math, and science (OECD 2004). The target population in PISA was defined as 15-year-olds enrolled in schools regardless of the grade level, the type of institution (i.e., vocational or academic schools) in which they were enrolled, or whether they were full-time or part-time students. ${ }^{1}$ In addition to test scores, PISA collected demographic, school-related information on students, including immigrant status, and the type of school attended, which are pivotal variables for this analysis.

We pool PISA 2003 and 2006 data to ensure enough same sizes for immigrant students in each country. ${ }^{2}$ The size of the final sample, after missing cases on immigrant status were deleted, is 9,434 (among them, 1,193 first-generation or second-generation immigrant students) for Austria, 17,310 (among them, 2,070 immigrant students) for Belgium, and 8,198 (among them, 1,287 immigrant students). Pooling two surveys facilitates separate analyses for first-generation and second-generation immigrant students. Moreover, an important advantage of PISA surveys over other international surveys of student achievement is that information on countries of origin was collected for several countries including all our three countries. Pooling PISA 2003 and 2006 also enables us to examine differences among immigrant students from different countries

[^0]of origin. ${ }^{3}$ However, due to limited numbers of immigrant students per each country of origin, we are not able to include both generation and country of origin into the same model but have to rely on separate analyses.

## Variables: Immigrant Status

In PISA, students were asked if they, their mother, and their father, respectively, were born in the country where they were tested or in another country. Following PISA's instruction (see OECD 2004), we distinguish three groups of students from the three items of country of birth: native, second-generation, and first-generation students. Native students refer to those who were born in the country of the test with at least one parent born in that country. Secondgeneration students are those born in the country of test with both parents born in another country. Finally, students are classified as first-generation students when they were born in another country and at least one parent was born in another country.

In PISA, students were also asked to indicate countries of origin for themselves, mother, and father. Using the information, we distinguish a few major groups of immigrant students by origin country in each country, depending on the size of each group. The origin country of an immigrant student is defined as a country from which the student him/herself came from, or a country where the student's mother or father came from if the student was a second-generation immigrant student. In Austria, distinguished are immigrant students whose origin countries are Turkey, Former Yugoslavia, or others. In Belgium, five groups of immigrant students are distinguished depending on their origin country: Maghreb countries, other African countries, EU

[^1]countries, Turkey, or others. In Germany, we distinguish four countries of origin for immigrant students: Former Soviet Republic, Poland, Turkey, and others. Turkish immigrant students are only the group that occupies a substantial portion of immigrant students across all the three countries.

## Variables: School Types

PISA 2003 and 2006 asked students to report a specific type of program (school) they were attending. In order to facilitate multivariate analyses with a manageable number of school types 15-year-old students attend, we classify secondary schools attended into three categories in each country, separately: low-status, middle-status, and high-status schools. High-status schools are basically academic-oriented ones that lead students to tertiary education like Gymnasium in Germany, while low-status schools are vocational-oriented ones that prepare students for labor market upon graduation like Hauptschule in Germany. Middle-status schools fall in between, like Realschule in Germany. Similarly, in Austria high-status schools pertain to Gymnasium, while low-status schools include Hauptschule and Polytechnishe (vocational). Medium vocational schools (BMS) are classified into middle-status schools. In Belgium, regular secondary schools are classified into high-status schools, technical secondary schools into middle-status schools, and vocational secondary schools into low-status schools.

## Variables: Controls

In order to compare the likelihood of attending a type of school between immigrant and native students after socioeconomic background variables are taken into account, we control for an extensive list of variables including parental education and occupation, cultural possessions at
home, and language minority status. Given substantial socioeconomic disadvantages of immigrant students in Austria, Belgium, and Germany (see Table 1 below), and evidence of the significant effects of socioeconomic factors on school type (Buchmann and Park 2009), it is critical to control extensively for socioeconomic variables to assess the effects of immigrant status on school type. An important advantage of PISA dataset over other international surveys of student achievement like TIMSS (Third International Mathematics and Science Study) is the PISA's extensive list of socioeconomic variables (Buchmann 2002).

Parental education is the higher level of educational attainment of the parents and it has three categories: lower secondary education completed or less (the reference category), upper secondary education completed, and tertiary education completed. Parental occupation indicates parents' current or last main job and is measured by the International Socio-Economic Index of Occupational Status developed by Ganzeboom, De Graaf and Treiman (1992). Higher values of the index indicate higher socioeconomic status of the occupation. The higher status occupation between mother's and father's occupation is used. PISA constructed an index of cultural possessions on the basis of students' reports on the availability of classic literature, books of poetry, and works of art. Scaled to have a mean of 0 and a standard deviation of 1 across all OECD students participating in PISA, positive values of the index indicate higher levels of cultural possessions at home. Students also indicated whether the language they speak at home most of the time was the language of instruction, another official national language, another national dialect, or another (foreign) language. Consistent with the classification used in the PISA report (OECD 2004), we distinguish students who speak a foreign language at home most of the time from other students who speak a language of instruction, official national language, or another national dialect. We also include gender as another control. Finally, considering that
the final dataset used in this analysis combines PISA 2003 and 2006, we include in multivariate analyses a dummy variable to indicate PISA 2003 or 2006.

## TABLE 1 ABOUT HERE

Table 1 presents descriptive statistics (proportions for categorical variables and means for continuous variables) of control variables separately for native, first-generation, and secondgeneration students. Across all the three countries, native students are substantially advantaged in socioeconomic background. Parents of native students on average have higher levels of educational attainment and occupations of higher status than parents of first-generation and second-generation immigrant students. Native students are also advantaged in the level of cultural possessions at home. Although first-generation immigrant students seem slightly better off than second-generation students, the differences in socioeconomic background between the two groups of immigrant are not as apparent as comparisons with native students.

## Results

Prevalence of Immigrant Students
TABLE 2 ABOUT HERE
The second and third columns in Table 2 present the relative share of native and immigrant (first and second generations combined) students, respectively, among total 15-yearold students in each country. Austria, Belgium, and Germany show a similar share of immigrant students, about 13-15 percent of total 15-year-old students. Although the overall share of immigrant students is similar across the three countries, the relative share of first- vs. secondgeneration immigrant students is somewhat different. In Austria, there are more first-generation
immigrant students than second-generation, while opposite is the case for Belgium. In Germany, the share of first-generation immigrant students is similar to the share of second-generation.

In regard to country of origin, Turkish immigrant students account for the largest proportion among immigrant students in Belgium (4.3 percent of total 15-year-old students) and in Germany (4.6 percent). In Austria, Turkish immigrant students account for 3.5 percent of total 15-year-old students, while immigrant students whose origin countries are one of former Yugoslavia account for the largest proportion (5.9 percent) among immigrant students.

## Multinomial Logit Models of School Type

## Differences by Immigrant Generation

FIGURE 1 ABOUT HERE
Figure 1 summarizes the results of multinomial logit regression predicting the likelihood of attending low-status school as forms of odds ratios. The white bars pertain to comparisons between first-generation and native students, while the dark bars pertain to comparisons between second-generation and native students. The first two bars in each country indicate the results of gross differences, while the following two bars shows differences, net of gender, socioeconomic background, language used at home, and an indicator distinguishing PISA 2003 and 2006 data. The coefficients and their significance of all independent variables as well as immigrant status can be found in a series of tables in Appendix A (Model 1 and Model 1-1 in Table 3-1 through 33). Because our interest is the relative likelihood of attending a low-status school between immigrant and native students, we do not focus on differences in the likelihood of attending middle-status schools. The results for the comparison between middle-status and high-status schools can be also found in Appendix A.

The first two bars in Figure 1 show that the odds of attending low-status schools are 3.4 times larger for first-generation immigrant students and 2.4 times larger for second-generation immigrant students than the odds for their native peers in Austria. Controlling for individual and family characteristics reduces the odds, resulting in 2.1 for first-generation and 1.1 for secondgeneration. The difference between first-generation immigrant students and natives remains statistically significant, while the difference between second-generation and native students is no longer significant (see Model 1 and Model 1-1 in Table 3-1 in Appendix A).

A similar pattern is found for Belgium: both first- and second-generation immigrant students are much more likely to attend low-status schools than their native peers. Accounting for differences in individual and family characteristics reduces the differences in the likelihood of attending low-status schools between immigrant and native students. Now, the difference between second-generation immigrant students and their native students becomes non-significant, while the difference between first-generation immigrant and native students remains significant.

Germany is somewhat deviant from the pattern for Austria and Belgium in that there is no relative advantage of second-generation immigrant students as compared to first-generation counterparts. The gross difference in the likelihood of attending low-status schools between natives and second-generation is even larger than the corresponding difference between natives and first-generation. Taking into account individual and family characteristics substantially reduces the differences between natives and immigrant students in the odds of attending lowstatus schools. However, note that the difference remains significant at the 0.1 level for both first-generation and second-generation immigrant students. Once individual and family variables are held constant, first-generation and second-generation immigrant students show similar odds of attending low-status schools, in contrast to the relative advantage of second-generation in

Austria and Belgium. In fact, Germany is one of the rare cases where second-generation students are worse off in academic performance than first-generation students (OECD 2006). ${ }^{4}$

## Differences by Country of Origin

FIGURE 2-1 through 2-3
Next, we move to the results of multinomial logit regression predicting the likelihood of attending low-status school by country of origin. The whole set of coefficients and their significant in the models for country of origin is found in Appendix A (Model 2 and Model 2-1 in Table 3-1 through 3-3). The major focus, differences among immigrant students by country of origin in attending low-status vs. high-status schools, is depicted in Figure 2-1 through 2-3. In the figures, the white bars indicate gross differences between native and a corresponding group of immigrant students, while the dark bars represent differences, net of gender, socioeconomic background, language, and an indicator of PISA 2003 or 2006.

In Figure 2-1 for Austria, the significant differences, between natives and immigrant students whose origin countries are one of former Yugoslavia and between natives and immigrant students whose origin countries are others, disappear after individual and family characteristics are held constant. However, the higher likelihood of attending low-status school among Turkish immigrant students remains significant net of controls. The relative disadvantage of Turkish immigrant students is also found in Germany (Figure 2-3). Interestingly, Turkish immigrant students in Belgium do not show a significant difference from their native peers in their likelihood of attending low-status schools, once socioeconomic background factors are

[^2]taken into account (Figure 2-2). In Belgium, immigrant students whose origin countries are other EU countries are most likely to attend low-status schools.

## OLS Regression Analysis of Test Scores

The analysis above highlights significant disadvantage of immigrant children in attending high-status schools compared to their native peers. Now, we turn to the results of OLS regression analysis predicting an individual student's test scores (reading, math, and science) by her/his immigrant status and other demographic and socioeconomic characteristics. Then, we add a variable of school type to the model to assess the extent to which performance difference between immigrant and native students is accounted for by the type of schools they attend. TO BE ADDED.

## Conclusion

TO BE ADDED

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Figure 1. Odds Ratios of Attending Low-Status Schools


Figure 2-1. Odds Ratios of Attending Low-Status School by Origin Country (Austria)


Figure 2-2. Odds Ratios of Attending Low-Status Schools by Origin Country (Belgium)


Figure 2-3. Odds Ratios of Attending Low-Status School by Origin Country (Germany)


Table 1. Proportions and Means of Independent Variables by Immigrant Status

|  | Female $^{\mathrm{a}}$ | Parental Education $^{\mathrm{a}}$ |  |  | Pa. Occu $^{\mathrm{b}}$ |  | Cult. Pos $^{\mathrm{b}}$ Foreign Lang |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
|  |  | LT HS | HS | Tertiary |  |  |  |
| Austria |  |  |  |  |  |  |  |
| Native | 0.497 | 0.037 | 0.489 | 0.474 | 48.910 | 0.051 | 0.007 |
| Second-Generation | 0.504 | 0.321 | 0.315 | 0.363 | 39.530 | -0.288 | 0.626 |
| First-Generation | 0.473 | 0.220 | 0.339 | 0.441 | 40.310 | -0.189 | 0.652 |
|  |  |  |  |  |  |  |  |
| Belgium |  |  |  |  |  |  |  |
| Native | 0.480 | 0.094 | 0.334 | 0.571 | 51.120 | -0.289 | 0.011 |
| Second-Generation | 0.512 | 0.336 | 0.326 | 0.338 | 43.140 | -0.483 | 0.299 |
| First-Generation | 0.429 | 0.283 | 0.296 | 0.422 | 45.470 | -0.538 | 0.292 |
|  |  |  |  |  |  |  |  |
| Germany |  |  |  |  |  |  |  |
| Native | 0.492 | 0.143 | 0.423 | 0.434 | 50.710 | 0.081 | 0.009 |
| Second-Generation | 0.510 | 0.461 | 0.266 | 0.273 | 40.040 | -0.198 | 0.395 |
| First-Generation | 0.514 | 0.425 | 0.197 | 0.378 | 41.580 | -0.121 | 0.468 |

a For categorical variables, presented are proportions.
$b$ For continuous variables, presented are means.

Table 2. Weighted Percentage of Students in PISA 2003 and 2006 by Immigrant Status

|  | Natives Immigrants |  | Generation |  | Country of Origin |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Austria | 86.8 | 13.2 | First Generation | 8.5 | Former Yugoslavia | 5.9 |
|  |  |  | Second Generation | 4.7 | Turkey | 3.5 |
|  |  |  |  |  | Others | 3.8 |
| Belgium | 87.4 | 12.6 |  |  |  |  |
|  |  |  | First Generation Second Generation | 5.9 | Africa | 1.1 |
|  |  |  |  | 6.7 | Maghreb | 2.3 |
|  |  |  |  |  | Turkey | 4.3 |
|  |  |  |  |  | EU Countries | 3.0 |
|  |  |  |  |  | Others | 1.9 |
| Germany | 85.2 | 14.8 |  |  |  |  |
|  |  |  | First Generation | 7.5 | Former Soviet Republic | 4.2 |
|  |  |  | Second Generation | 7.3 | Poland | 2.0 |
|  |  |  |  |  | Turkey | 4.6 |
|  |  |  |  |  | Others | 4.0 |

## Appendix A (Table 3-1 through 3-3)

Table 3-1. Multinomial Logit Models of School Type Attended in Austria

| Model 1 | Model 1-1 | Model 2 | Model 2-1 |
| :---: | :---: | :---: | :---: |
| Panel A. Low-Status vs. High-Status Schools |  |  |  |
| First Generation $1.230(0.148){ }^{* * *}$ | 0.720 (0.220)** |  |  |
| Second Generation $0.882(0.179)^{* * *}$ | 0.101 (0.235) |  |  |
| Origin Country of Immigrant (ref: Natives) |  |  |  |
| Turkey |  | $1.852(0.242){ }^{* * *}$ | 0.820 (0.311) ${ }^{*}$ |
| Former Yugoslavia |  | 1.047 (0.183) ${ }^{* * *}$ | 0.351 (0.279) |
| Other |  | $0.563(0.289){ }^{\wedge}$ | 0.532 (0.337) |
| Female | -0.997 (0.094) ${ }^{* * *}$ |  | $-1.003(0.096){ }^{* * *}$ |
| Parental Education: HS | -1.184 (0.187) ${ }^{* * *}$ |  | -1.073 (0.199)*** |
| Parental Education: Tertiary | $-1.161(0.184){ }^{* *}$ |  | -1.042 (0.188) ${ }^{* * *}$ |
| Parental Occupational Index | -0.042 (0.004) ${ }^{* * *}$ |  | -0.042 (0.004) ${ }^{* * *}$ |
| Cultural Possession | -0.603 (0.035) ${ }^{* * *}$ |  | -0.605 (0.033) ${ }^{* * *}$ |
| Foreign Language | -0.141 (0.215) |  | -0.131 (0.234) |
| Dummy for Yr. $2006-0.199$ (0.139) | -0.031 (0.141) | -0.208 (0.139) | -0.055 (0.141) |
| Intercept $\quad-1.500(0.108){ }^{* * *}$ | $2.001(0.323){ }^{* * *}$ | -1.496 (0.109) ${ }^{* * *}$ | 1.906 (0.301) ${ }^{* * *}$ |

## Panel B. Middle-Status vs. High-Status Schools

| First Generation | $0.252(0.151)$ | $-0.116(0.164)$ |
| :--- | :--- | :--- |
| Second Generation | $0.258(0.274)$ | $-0.250(0.242)$ |

Origin Country of Immigrant (ref: Natives)

| Turkey |  | $0.777(0.467)^{\wedge}$ | $0.134(0.482)$ |
| :--- | :--- | :--- | :--- |
| Former Yugoslavia |  | $0.418(0.175)^{*}$ | $-0.126(0.214)$ |
| Other | $-0.443(0.148)^{* *}$ | $-0.387(0.177)^{*}$ |  |
| Female | $-0.554(0.135)^{* * *}$ |  | $-0.556(0.135)^{* * *}$ |
| Parental Education: HS | $-0.284(0.176)$ |  | $-0.219(0.153)$ |
| Parental Education: Tertiary | $-0.362(0.173)^{*}$ |  | $-0.292(0.152)^{\wedge}$ |
| Parental Occupational Index | $-0.050(0.003)^{* * *}$ |  | $-0.050(0.003)^{* * *}$ |
| Cultural Possession | $-0.523(0.035)^{* * *}$ |  | $-0.522(0.034)^{* * *}$ |
| Foreign Language | $-0.169(0.182)$ |  | $-0.212(0.163)$ |
| Dummy for Yr. 2006 | $-0.154(0.088)^{\wedge}$ | $-0.047(0.083)$ | $-0.151(0.088)^{\wedge}$ |
| Intercept | $-0.388(0.085)^{* * *}$ | $2.575(0.237)^{* * *}$ | $-0.390(0.085)^{* * *}$ |
| $* * \mathrm{p}<.001 \quad * * \mathrm{p}<.01 \quad * \mathrm{p}<.05 \wedge \mathrm{p}<.10$ |  |  | $2.506(0.051(0.083)$ |

Table 3-2. Multinomial Logit Models of School Type Attended in Belgium

| Model 1 | Model 1-1 | Model 2 | Model 2-1 |
| :---: | :---: | :---: | :---: |
| Panel A. Low-Status vs. High-Status Schools |  |  |  |
| First Generation 1.190 (0.155) ${ }^{* * *}$ | 0.912 (0.193) ${ }^{* * *}$ |  |  |
| Second Generation $0.397(0.161)^{*}$ | -0.258 (0.163) |  |  |
| Origin Country of Immigrant (ref: Natives) |  |  |  |
| Turkey |  | 0.783 (0.247) ${ }^{* *}$ | -0.093 (0.277) |
| Africa |  | 0.483 (0.161) ${ }^{* *}$ | 0.141 (0.192) |
| Maghreb |  | 0.132 (0.241) | -0.965 (0.283)** |
| EU |  | 1.357 (0.193) ${ }^{* * *}$ | 1.081 (0.201) ${ }^{* * *}$ |
| Other |  | 0.644 (0.150) ${ }^{* * *}$ | 0.371 (0.179) ${ }^{*}$ |
| Female | -0.621 (0.085) ${ }^{* * *}$ |  | -0.618 (0.085) ${ }^{* * *}$ |
| Parental Education: HS | -0.955 (0.111) ${ }^{* * *}$ |  | -0.993 (0.110) ${ }^{* * *}$ |
| Parental Education: Tertiary | -1.663 (0.113) ${ }^{* * *}$ |  | -1.704 (0.114) ${ }^{* * *}$ |
| Parental Occupational Index | -0.049 (0.003) ${ }^{* * *}$ |  | -0.049 (0.003) ${ }^{* * *}$ |
| Cultural Possession | -0.574 (0.034) ${ }^{* * *}$ |  | -0.582 (0.034) ${ }^{* * *}$ |
| Foreign Language | -0.543 (0.181)** |  | -0.392 (0.172)* |
| Dummy for Yr. $2006-0.022$ (0.100) | 0.026 (0.098) | 0.000 (0.098) | 0.053 (0.096) |
| Intercept $\quad-0.901(0.074)^{* * *}$ | 2.745 (0.185) ${ }^{* * *}$ | $-0.913(0.074)^{* * *}$ | 2.767 (0.189) ${ }^{* * *}$ |

## Panel B. Middle-Status vs. High-Status Schools

| First Generation | $-0.343(0.181)^{\wedge}$ | $-0.366(0.213)^{\wedge}$ |  |
| :--- | :--- | :--- | :--- |
| Second Generation $\quad-0.060(0.145)$ | $-0.282(0.150)^{\wedge}$ |  |  |
| Origin Country of Immigrant (ref: Natives) |  | $-0.060(0.202)$ | $-0.335(0.216)$ |
| Turkey |  | $-0.405(0.271)$ | $-0.489(0.281)^{\wedge}$ |
| Africa |  | $-0.232(0.254)$ | $-0.700(0.258)^{* *}$ |
| Maghreb |  | $0.324(0.157)^{*}$ | $0.240(0.185)$ |
| EU | $-0.395(0.086)^{* * *}$ |  | $-0.808(0.237)^{* *}$ |
| Other | $-0.303(0.086)^{* *}$ |  | $-0.392(0.087)^{* * *}$ |
| Female | $-0.700(0.098)^{* * *}$ |  | $-0.332(0.084)^{* * *}$ |
| Parental Education: HS | $-0.026(0.002)^{* * *}$ |  | $-0.731(0.097)^{* * *}$ |
| Parental Education: Tertiary | $-0.274(0.029)^{* * *}$ |  | $-0.026(0.002)^{* * *}$ |
| Parental Occupational Index | $-0.668(0.156)^{* * *}$ |  | $-0.277(0.029)^{* * *}$ |
| Cultural Possession | $-0.045(0.131)$ | $-0.032(0.096)$ | $-0.562(0.145)^{* * *}$ |
| Foreign Language |  | $1.518(0.180)^{* * *}$ | $-0.523(0.072)^{* * *}$ |
| Dummy for Yr. 2006 | $-0.043(0.097)$ | $1.536(0.152)^{* * *}$ |  |
| Intercept | $-0.518(0.072)^{* * *}$ |  |  |

*** $\mathrm{p}<.001{ }^{* *} \mathrm{p}<.01{ }^{*} \mathrm{p}<.05 \wedge \mathrm{p}<.10$

Table 3-3. Multinomial Logit Models of School Type Attended in Germany

| Model 1 | Model 1-1 | Model 2 | Model 2-1 |
| :---: | :---: | :---: | :---: |

Panel A. Low-Status vs. High-Status Schools

| First Generation 1.156 (0.179) ${ }^{* *}$ | 0.389 (0.227) ${ }^{\wedge}$ |  |  |
| :---: | :---: | :---: | :---: |
| Second Generation $1.356(0.206){ }^{* *}$ | 0.439 (0.232) ${ }^{\wedge}$ |  |  |
| Origin Country of Immigrant (ref: Natives) |  |  |  |
| Turkey |  | 1.849 (0.245) ${ }^{* * *}$ | $0.801(0.281)^{* *}$ |
| Former Soviet Republic |  | 1.068 (0.231) ${ }^{* * *}$ | 0.369 (0.273) |
| Poland |  | 0.122 (0.297) | -0.538 (0.313) ${ }^{\wedge}$ |
| Other |  | 1.230 (0.213) ${ }^{* * *}$ | 0.453 (0.256) ${ }^{\wedge}$ |
| Female | $-0.415(0.067)^{* * *}$ |  | -0.418 (0.067) ${ }^{* * *}$ |
| Parental Education: HS | -0.811 (0.107) ${ }^{* * *}$ |  | -0.778 (0.108) ${ }^{* * *}$ |
| Parental Education: Tertiary | $-1.138(0.111)^{* * *}$ |  | -1.100 (0.109) ${ }^{* * *}$ |
| Parental Occupational Index | -0.046 (0.003) ${ }^{* * *}$ |  | -0.046 (0.003) ${ }^{* * *}$ |
| Cultural Possession | -0.340 (0.045) ${ }^{* * *}$ |  | -0.343 (0.044) ${ }^{* * *}$ |
| Foreign Language | 0.413 (0.173)* |  | 0.385 (0.172) ${ }^{*}$ |
| Dummy for Yr. 20060.062 (0.197) | 0.102 (0.198) | 0.062 (0.198) | 0.097 (0.198) |
| Intercept -1.049 (0.144)*** | 2.234 (0.254) ${ }^{* * *}$ | -1.049 (0.145) ${ }^{* * *}$ | 2.213 (0.254) ${ }^{* * *}$ |

## Panel B. Middle-Status vs. High-Status Schools

| First Generation | $0.470(0.186)^{*}$ | $0.182(0.208)$ |  |
| :--- | :---: | ---: | ---: |
| Second Generation | $0.315(0.199)$ | $-0.082(0.205)$ |  |
| Origin Country of Immigrant (ref: Natives) |  |  |  |
| Turkey |  | $0.523(0.236)^{*}$ | $0.035(0.254)$ |
| Former Soviet Republic |  | $0.472(0.219)^{*}$ | $0.199(0.245)$ |
| Poland |  | $0.256(0.259)$ | $-0.059(0.264)$ |
| Other |  | $0.289(0.210)$ | $-0.026(0.218)$ |
| Female | $0.004(0.067)$ |  | $0.003(0.067)$ |
| Parental Education: HS | $-0.095(0.100)$ |  | $-0.093(0.101)$ |
| Parental Education: Tertiary | $-0.467(0.096)^{* * *}$ |  | $-0.462(0.096)^{* * *}$ |
| Parental Occupational Index | $-0.028(0.002)^{* * *}$ |  | $-0.028(0.002)^{* * *}$ |
| Cultural Possession | $-0.332(0.035)^{* * *}$ |  | $-0.332(0.035)^{* * *}$ |
| Foreign Language | $0.015(0.158)$ |  | $0.038(0.157)$ |
| Dummy for Yr. 2006 | $-0.174(0.125)$ | $-0.153(0.131)$ | $-0.176(0.126)$ |
| Intercept | $1.702(0.180)^{* * *}$ | $-0.041(0.089)$ | $-0.156(0.132)$ |

${ }^{* * *} \mathrm{p}<.001^{* *} \mathrm{p}<.01{ }^{*} \mathrm{p}<.05 \wedge \mathrm{p}<.10$


[^0]:    ${ }^{1}$ For detailed information on PISA 2003, see the report of the results from PISA 2003 (OECD 2004). OECD (2007) summarizes the results from PISA 2006. For sampling, survey procedures, and methods, in particular, see the technical reports (OECD 2005).
    ${ }^{2}$ Although PISA was conducted in 2000 as well, PISA 2000 did not collect detailed information on school type but only a broad indictor of whether the school is academic or vocational. Therefore, we do not use PISA 2000 in this paper.

[^1]:    ${ }^{3}$ The information on country of origin was not collected in PISA 2000. This is another reason why we do not use PISA 2000.

[^2]:    ${ }^{4}$ Specifically, among total 17 countries analyzed in the OECD report (2006), Germany and New Zealand are only countries where second-generation students showed significantly poorer reading performance than first-generation students.

