



MANNHEIMER ZENTRUM FÜR
EUROPÄISCHE SOZIALFORSCHUNG

**Ethnic Differences in Educational
Placement:
The Transition from Primary to
Secondary Schooling**

Cornelia Kristen

Arbeitspapiere -
Mannheimer Zentrum für Europäische Sozialforschung
ISSN 1437-8574

Arbeitspapiere

Working papers

Nr. 32, 2000

Cornelia Kristen

**Ethnic Differences in Educational Placement:
The Transition from Primary to Secondary Schooling**

Kristen, Cornelia:

Ethnic Differences in Educational Placement: The Transition from Primary to
Secondary Schooling / Cornelia Kristen. –

Mannheim : 2000

(Arbeitspapiere - Mannheimer Zentrum für Europäische Sozialforschung ; 32)

ISSN 1437-8574

Not available in book shops.

Token fee: DM 5,-

Purchase: Mannheimer Zentrum für Europäische Sozialforschung (MZES), D – 68131 Mannheim

WWW: <http://www.mzes.uni-mannheim.de>

Editorial Note:

Cornelia Kristen is research fellow at the Mannheim Centre for European Social Research (MZES). She is currently working on the project "Educational Decisions in Immigrant Families", funded by the Deutsche Forschungsgemeinschaft (DFG).

Abstract

The paper investigates ethnic differences in educational decisions at the transition from primary to secondary schooling. Using a data set that was collected at a number of elementary schools we are able to identify immigrant and German pupils at a specific branching point in their educational career. The empirical analyses reveal that Italian and Turkish children are much more likely than their German age peers to attend the *Hauptschule* and are accordingly underrepresented in the two more demanding tracks of the German school system. These differences persist also when the average achievement in the two central school subjects "German" and "Maths" is taken into account. We also observe that ethnic origin has a considerable impact on the question whether a child will attend the *Hauptschule* or not; ethnicity, however, is not important for the question whether it will attend the *Realschule* or the *Gymnasium*. Furthermore, the paper investigates context effects of the classroom and the school environment. We find weak effects for the ethnic concentration in the classroom as well as significant effects for school membership.

Contents

- 1. Introduction 1
- 2. Composition and context effects 2
- 3. Data and variables..... 4
- 4. Ethnic differences at the transition to secondary schooling 7
- 5. Multivariate models..... 9
 - 5.1 Controlling for achievement: Do ethnic differences remain? 9
 - 5.2 Ethnic concentration and school membership 12
- 6. Summary and Conclusion 14
- 7. Reference 16

Introduction

One established result of previous empirical analyses on educational behaviour of immigrant children in the German school system is that these children's school performance does not match those of their German age peers. Children from immigrant families attain on average consistently lower educational qualifications than Germans of the same age (Alba et al. 1994; Büchel & Wagner 1996; Haisken-DeNew et al. 1996; Jeschek 1998). They are more likely to attend the lower academic tracks like the *Hauptschule*, and are consequently underrepresented in the more attractive trajectories such as the *Realschule* and the *Gymnasium*. In comparison to their German counterparts, they are also more likely to leave school without any degree and to remain without completing any vocational training (Alba et al. 1994). Furthermore, a still puzzling observation in this context is that different ethnic groups vary in their success in the school system. In general, Turkish and Italian immigrants represent the most disadvantaged groups, whereas immigrants from Greece do comparably well in the German educational system (Alba et al. 1994: 225, Bender & Seifert 1996). In sum, the general pattern of ethnic differentiation in educational outcomes seems to be well established for Germany.

It is the purpose of the paper to address this issue once more - this time from a slightly different perspective. The data base used here was collected at a number of elementary schools and includes information on the first and crucial transition point in the German school system. Therefore, it is possible – in contrast to previous works on the subject - to identify immigrant and German pupils at a specific transition in their educational career. In a first step, the paper investigates the extent of ethnic disadvantage at the transition to secondary schooling. In particular, it studies the empirical question whether the typical patterns of ethnic differentiation remain when controlling for a child's educational performance in different school subjects: Does identical achievement in school also lead to identical educational placement no matter of nationality? In a meritocratic system, transition rates to the different demanding types of schooling should be solely based on achievement. This implies that, once we control for the educational performance, no effects of ethnic origin should persist. If they do, however, this could indicate that other processes, perhaps discrimination on the part of the school or its teachers, are at work.

After having studied the degree of ethnic inequality in the German school system, I also intend to address the nature of these disadvantages. Here, two groups of factors are usually identified as relevant: First of all, individual characteristics such as the family's access to material, cultural, and social resources that can be used to promote the offspring's educational performance. Depending on the type and the amount of capital that families have at their disposal, their opportunities to influence the child's school career considerably differ. A second group of factors concerns the school environment that may also have an impact on pupils' educational success. Previous research has convincingly shown that individual resources comprise the most important factors that translate through specific mechanisms into educational performance. Nevertheless, context effects of the classroom as well as the school environment may also play a considerable role. Unfortunately, the

data set used here does not allow us to include both groups of factors. It comprises no information on family background and it lacks information on important aspects of the family's immigration biography such as for example the generation status. As previous empirical research on this subject has convincingly shown, both groups of factors are relevant for an explanation of ethnic differentiation in the school system (e.g. Alba et al. 1994; Esser 1990, Gang & Zimmermann 1996, Haisken-DeNew et al. 1996). With the data being limited in this respect, the empirical analyses are restricted to the investigation of context effects at the classroom and school level. Accordingly, the paper studies whether the ethnic concentration in the classroom and/or the school environment has an impact on the transition to secondary schooling.

As the key-questions of the paper are empirical in content, the main emphasis will be on the empirical analyses and interpretation. The paper starts with a brief discussion of the role of composition and context effects for educational placement. In the following section, the data base and the variables are introduced. Then, turning to the empirical findings, I will present in a first step some descriptive results regarding the transition patterns to secondary schooling for the different nationalities. In a second step, two sets of multivariate models are estimated, the first focusing on effects of ethnic origin and the second examining context effects of the classroom and the school environment. The main findings are summarised and discussed in the concluding section of the paper.

Composition and context effects

It is a common observation that transition rates vary between classrooms and schools. Pupils in some schools show on average considerably better outcomes than pupils in other schools. In order to explain such differences it is useful to distinguish between three different types of effects: (1) Composition effects, (2) aggregate context effects, and (3) global context effects (cf. Dryler 1999, Wiese 1986).

Composition effects are based on the composition of pupils within the classroom or school with respect to individual characteristics such as ethnic origin or socio-economic background. In the German school system, we can observe composition effects resulting from systematic variation in school intake. Institutional arrangements assign the children at the beginning of their school career to one specific elementary school based on the residential district. Not surprisingly, residential segregation translates into school segregation. Especially in large cities and areas of industrial concentration, we find many ethnically segregated schools. The ethnic composition is an indicator of the different learning opportunities children confront in different classrooms. A higher concentration of immigrant students in class often forces teachers to focus especially on language acquisition and elaboration. Hence, in classes where many children are struggling with this sort of problem, the time for other learning processes is cut down accordingly. In this case, teachers' aspiration levels tend to be adjusted downwards, whereas in classes with few foreign pupils language does not pose a serious problem slowing down the learning progress. Summarising, variation in the ethnic composition is

expected to influence the learning opportunities and will therefore translate into children's educational performance as well as into the transition rates to secondary schooling. Thus, some schools are likely to have better outcomes simply because they deal with a more favoured school population (Rutter 1983: 9).

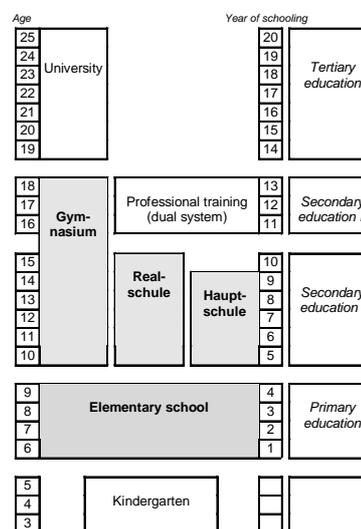
Aggregate context effects originate from the composition of individuals in a particular context (e.g. classroom or school); but they have an independent effect on the people in that context over and above the effect of each individual (Dryler 1999: 301). Peer influences may serve as an example for such an aggregate context factor. Pupils in a classroom constitute a group context for the individual defining shared standards or group norms. This may concern standards for achievement or a particular aspiration climate. The level of performance that is predominant in class constitutes a reference point that indicates which kind of educational behaviour is acceptable, rewarded or punished in everyday school life. Thus, a high ethnic concentration in the classroom points to a relatively low standard and a negative aspiration climate which could in turn influence the educational decisions students take within this context. Besides peer influences, the composition in the classroom could also constitute an aggregate context variable for teachers in the classroom. For example, when teachers enter a new classroom, they usually have no detailed information on each child's performance. In this case, they may simply take the classroom composition as an indicator of these children's academic abilities. In this case, the first impression constitutes a reference point that can be adjusted once more information is available. In addition, the ethnic concentration in the classroom may also be a useful indicator for comparison purposes with other classes. Summarised in one number, the percentage provides a lot of implicit information about the classroom and helps in this way to easily judge the standing of one's own class compared to the average classroom. In the transition situation, this could mean that teachers who deal with a less favoured population, will be especially cautious and hesitating to assign their pupils to the higher educational trajectories because compared to other schools their students' chances to succeed are on average lower.

Global context effects go back to specific characteristics that are inherent to classrooms or schools. They cannot be traced back to individual pupils. Examples for global context factors are: school building, accommodation, curricula, material, resources, school and class size, school climate etc. A large body of research in this field called "school effectiveness research" investigates the impact of specific characteristics of the school environment on children's performance (e.g. Mortimore et al. 1988, Rutter 1979, Smith & Tomlinson 1989). Since Coleman's study on "Equality of Educational Opportunity" (1966) it is well established that, compared to variables of home environment and individual resources, schools can only poorly account for academic achievement. Therefore, research in this area primarily concentrates on the question which characteristics of schools help to promote children's progress once their initial performance at school entrance is taken into account.

Data and variables

The data set used here was collected at a number of elementary schools in *Baden-Württemberg*, one of the German *Bundesländer* (federal state). This data set includes information on the first and crucial transition point in the German school system.

This transition is located after the completion of four years of primary schooling. At this point, the families have to decide about the further educational path for their children. The transition is regulated by institutional rules that vary to some extent between the different federal states. This variation results from the independence of the federal states in educational and cultural matters („*Kulturhoheit*“). The diagram shows the different options the German educational system provides (cf. Anweiler 1996: 52). After the completion of primary education parents choose between three different demanding types of schooling: *Hauptschule*, *Realschule*, or *Gymnasium*. The *Gymnasium* represents the longest and most demanding educational track and is a necessary requirement for the admission to university. In contrast, the *Realschule* offers a shorter educational path that prepares for vocational training in the dual system. The *Hauptschule* also prepares for professional training, but is limited to a smaller spectrum of professions. This track is the least demanding and shortest educational path in the German school system. The transition from elementary school to one of this types of schooling takes place at an early age and represents in comparison to other European countries a rather early selection point. This branching point is of crucial importance because here, at the age of ten, the future educational path of the child is fixed to some extent. Although it is possible, to correct for this decision later on, and to change to a different educational track, such changes in practice rarely occur (cf. Blossfeld 1988, Bofinger 1990, Henz 1997).



The statistical office of *Baden-Württemberg* asks all elementary schools to collect information on the transition from primary to secondary education. Teachers have to fill in a form indicating which recommendation each pupil got from the school regarding the future educational path (either *Hauptschule*, *Realschule*, or *Gymnasium*), the reaction on the part of the parents (whether the parents agreed with the recommendation given by the school), eventual participation in special exams or extensive consultation (in case of disagreement), and finally the type of schooling the children will attend after the transition.¹ In addition, the statistical office asks for the nationality of all elementary pupils. Unfortunately, these two sources are recorded separately. Consequently, the aggregate data base provides no information on the transition patterns of different ethnic groups. Therefore, it was necessary to collect the data directly at elementary schools.² Given time and budget restrictions, it was impossible to conduct an extensive systematic survey, drawing a random sample from the population of all elementary pupils in class 4 for a specific time period in *Baden-Württemberg*. Instead, I contacted a number of elementary schools in *Baden-Württemberg*, most of them located in Mannheim, and asked for their statistical material. I always had information on the type and the percentage of

¹ In *Baden-Württemberg*, the recommendation of the school is of crucial importance for the child's transition because it usually determines the educational trajectory. Although parents may contradict the recommendation, their means of protest are limited to either extensive consultation or participation in special examinations. In contrast, in other federal states parents can freely decide about the educational path of their children.

each school's immigrant population. In this way, it was at least possible to select schools that varied in their ethnic concentration. Six schools provided their transition data including information on the school years from 1983/1984 to 1999/2000. Of course, the data on the most recent school years predominate because the material for earlier age groups was often not any more available. Assuming that the different age cohorts do not significantly differ in their transition behavior and considering that no drastic institutional change has occurred in the regulation of the transition in *Baden-Württemberg* since 1983, the time aspect is neglected in the empirical analysis. In total, the data base includes 3354 cases (pupils in class 4 before the transition) in 151 classes. Taking into account only the cases that provide information on all relevant variables, the data set comprises 3139 cases.

Table 1: Descriptive Statistics

Variables	Per cent	Mean	SD	Range
<i>Dependent Variable:</i>				
TRANSITION				
Hauptschule	44,8			
Realschule	27,2			
Gymnasium	28,0			
<i>Independent Variables:</i>				
<i>Pupil level</i>				
NATIONALITY				
German	60,8			
Turkish	12,6			
Italian	5,7			
Yugoslavian (former)	3,4			
Aussiedler	9,9			
Other	7,6			
SEX				
Male	50,0			
Female	50,0			
MARKS				
German				
1.0-2.4	25,9			
2.5-3.0	24,2			
3.1-3.5	17,0			
3.6-6.0	32,8			
Maths				
1.0-2.4	31,7			
2.5-3.0	24,0			
3.1-3.5	16,7			
3.6-6.0	27,6			
Mean				
1.0-2.4	27,8			
2.5-3.0	25,9			
3.1-3.5	16,2			
3.6-6.0	30,2			
<i>Classroom level</i>				
CONCENTR				
Per cent foreign classmates		39,5	24,5	3,6-100

Statistics measured at the level of the variable, that is for pupil variables at the pupil level ($n=3139$), for the classroom variable CONCENTR on the classroom level (with 3354 pupils in 151 classes).

Logistic regression analysis is used to investigate the educational outcomes of different ethnic groups. The dependent variable is the transition to one of the three types of schooling, formulated as a series of dichotomies: *Realschule & Gymnasium* versus *Hauptschule* and *Gymnasium* versus *Hauptschule & Realschule*. Table 1 shows that 44,8% of the pupils in our data set visit the *Hauptschule*, 27,2% the

² I am very much obliged to the headmistresses and headmasters of these elementary schools for providing the material. I am also indebted to Michael Herrmann, Andreas Horr, Lucia Hug, Angela Jäger, and Patrick Schupp who spent a lot of time entering the data.

Realschule, and the remaining 28% the *Gymnasium*. These numbers are different from the official statistics for *Baden-Württemberg*, where the transition rates to the *Hauptschule* usually amount to about 30%, to the *Realschule* also to about 30%, and to the *Gymnasium* to about 40%. This discrepancy reflects the unsystematic selection process that leads in our data base to an overrepresentation of less successful students. The table includes also the descriptive statistics for the independent variables. The distribution of the categorical variables is given in percentages; for the continuous variable the table presents mean, standard deviation, and range.

NATIONALITY: Ethnic origin is represented as a series of dummy variables with German pupils as the reference category. Based on the numbers of cases of the different ethnic groups in the data set, I examine educational trajectories separately for four immigrant groups: Turks, Italians, (former) Yugoslavians, and ethnic Germans repatriated from the East (*"Aussiedler"*)³. Other groups are retained in a residual category, and German age peers form the comparison group.

SEX is included in the model as a dummy variable with males being the reference category.

MARKS: As further control variables the model includes the grades in the school subjects "German" and "Maths", and also an average grade of these two school subjects. The grades range from 1 to 6 with 1 being the best grade that can be obtained.⁴ For the empirical analysis, several categories were defined that take into account a specific institutional condition: The school's recommendation is mainly based on the child's educational performance, following the rule that children with a grade average in the subjects "German" and "Maths" ranging between 1 and 2.5 obtain a recommendation for the *Gymnasium*, children with a range from 2.6-3.0 a recommendation for the *Realschule*, and children whose grades are below 3.0 a recommendation for the *Hauptschule*. Besides school achievement, teachers are also asked to take into account children's learning and working behaviour, their will to achieve, as well as their general development. However, school performance is the most important determinant for the recommendation. Therefore, the two institutionally defined threshold values need to be taken into account in the empirical analysis. This means that the most interesting cases will be those where the grade average is located around the two threshold values (2.5 and 3.0) because here, where the recommendation is not unequivocally determined by the performance, other factors may also be relevant. In contrast, when children's school performance is either very good or very poor we would not expect other factors to be strong enough to substantively influence the teacher's evaluation. Therefore, school marks are categorised accordingly, using another series of dummy variables.

³ The *"Aussiedler"* are a group of immigrants coming from different Eastern European countries that have German ancestors and that obtain, therefore, also German citizenship. Because of their German nationality it is difficult to identify them in the data. It must be suspected that the data set contains more *"Aussiedler"* than identified. However, I tried to pay attention to this problem: Whenever possible, I asked teachers to indicate which children belong to this group. But with the data going back for more than fifteen years, this strategy was only applicable to the most recent school years. Therefore, the place of birth was also taken as an indicator pointing to Eastern European origin.

⁴ The grades express the following meaning: 1: very good, 2: good, 3: satisfactory, 4: sufficient, 5: poor, 6: unsatisfactory

CONCENTR: is a classroom level variable that refers to the percentage of immigrant pupils in the classroom. It is an aggregated variable that is based on all pupils in the classroom, that is also on those children not in the model.

SCHOOL: In order to control for differences between the schools, a constant is included for each school. Two of the six schools provided only few cases. As they show a quite similar concentration of foreign pupils that also reflects the similarity in the type of the two residential districts, they are summarised in one category that constitutes the reference group.

Ethnic differences at the transition to secondary schooling

Table 2 presents at the top the transition rates to the three educational branches for the different ethnic groups. By and large, the differences revealed in the table correspond to the well-known patterns of ethnic differentiation in educational placement. Immigrant children from all groups are more likely than their German age peers to attend the *Hauptschule*. The magnitude of these differences is considerably large, especially regarding Turkish and Italian pupils. For them, the transition rates to the *Hauptschule* are more than twice as high as those of German children. At the same time, Germans are more likely to attend the *Gymnasium*. More than one third of this group chooses the highest educational trajectory. Again, the largest differences exist for Turkish and Italian children. They show by far the least advantageous transition rates. On the other hand, *Aussiedler* do comparably well. Their transition rates to the *Realschule* are slightly higher than those of their German age peers. Although they attend more often the *Hauptschule* and show lower transition rates to the *Gymnasium* than German children, the difference is only small. Children from former Yugoslavia take a middle position in this spectrum: Nearly 60% attend the *Hauptschule* and lie, therefore, well above the average distribution. The remaining 40% are equally distributed between the *Realschule* and the *Gymnasium*. In this respect, they clearly contrast the transition rates of Italian and Turkish children.

Table 2: Transition rates and achievement for different ethnic groups (in percent)

	German (n=1907)	Turkish (n=396)	Italian (n=180)	Yugoslavian (n=106)	Aussiedler (n=312)	Other (n=238)	Total (n=3139)
TRANSITION							
Hauptschule	35,6	75,3	81,7	59,4	38,5	41,6	44,8
Realschule	30,0	16,2	10,6	19,8	33,7	30,7	27,2
Gymnasium	34,3	8,6	7,8	20,8	27,9	27,7	28,0
MARKS							
GERMAN							
1.0-2.4	33,5	6,3	6,7	19,8	22,4	19,7	25,9
2.5-3.0	26,2	18,9	12,2	18,9	26,6	26,1	24,2
3.1-6.0	40,3	74,7	81,1	61,3	51,0	54,2	49,8
MATHS							
1.0-2.4	36,9	14,9	11,1	23,6	33,7	34,9	31,7
2.5-3.0	24,6	20,5	14,4	20,8	30,8	24,8	24,0
3.1-6.0	38,5	64,6	74,4	55,7	35,6	40,3	44,3
MEAN							
1.0-2.4	34,4	9,1	8,3	22,6	26,9	23,9	27,8
2.5-3.0	28,4	16,4	10,6	15,1	31,1	30,7	25,9
3.1-6.0	37,2	74,5	81,1	62,3	42,0	45,4	46,4

In addition, Table 2 presents the marks in the school subjects "German" and "Maths" for the different nationalities. Achievement in these subjects is the crucial determinant of the transition to secondary schooling. Therefore, it is not surprising that the pattern that was identified above for the transition rates is also revealed in the distribution of school marks. German children obtain better marks in "German" as well as in "Maths". Their average achievement in these two subjects does only slightly differ comparing each category. But all other groups show a remarkable discrepancy in achievement between these two school subjects. Immigrant children do considerably better in "Maths" than in "German". This may be due to the fact that German is not the mother tongue of immigrant children so that language difficulties should be a more prevalent problem resulting in poorer grades in "German" than in "Maths". In addition, we can also observe considerable differences between the ethnic groups. In both subjects Italian children obtain the least desirable results. They do even worse than Turkish children, a group that shows on average also a relatively poor performance. The magnitude of the difference between the German population and Italian and Turkish children is quite large. For example, Turkish and Italian pupils are five times less likely to belong to the best grade category in "German" and about three times less likely to belong to the best grade category in "Maths". Although Yugoslavian children obtain on average poorer marks than German children, they contrast the disadvantaged pattern of Italian and Turkish immigrants in both subjects. Again, the *Aussiedler* show the best results of all immigrant groups. In "Maths" their marks are practically identical to those of their German age peers; only in "German" differences remain.

Finally, the table presents at the bottom the "Mean", an average grade of the subjects "German" and "Maths". Keeping in mind the above mentioned institutional rule that children with a given grade average in these subjects should obtain a recommendation for a particular branch of secondary schooling, the "Mean" and the transition rates should be approximately identical. Although the numbers generally correspond in this respect, we can also observe some interesting differences. For German pupils and *Aussiedler*, the transition to the *Gymnasium* roughly matches their average achievement in the relevant subjects. Simultaneously, the transition rates to the *Realschule* are slightly higher and to the *Hauptschule* slightly lower than achievement taken alone would suggest. Thus, the transition rates for these groups seem to be more advantageous than their actual achievement. For Italian and Turkish immigrants such differences do not exist. For them, the transition rates approximately match their achievement. Yugoslavians show slightly lower transition rates to the *Gymnasium* and the *Hauptschule* and slightly higher transition rates to the *Realschule* than expected. For them, two contrary processes seem to be at work that lead to a relative concentration in the *Realschule*. It must be stressed that all reported differences are small and that it is not yet possible to base on these descriptive observation any substantial conclusion. However, the differences may indicate that besides achievement other factors may also be relevant for the final educational transition. In the following section, I will pursue this issue in more detail.

Multivariate models

The present study uses logistic regression analysis in order to investigate the educational behaviour of different ethnic groups at the transition from primary to secondary schooling. Separate models were estimated for the two dichotomies of the dependent variable, that is *Realschule & Gymnasium* versus *Hauptschule*, and *Gymnasium* versus *Hauptschule & Realschule*. Table 3 and 4 present the different models for these outcomes. In Table 3, I consider whether ethnic differences in educational placement remain when educational performance in different school subjects is taken into account. In addition, I control in Table 4 for the ethnic concentration in the classroom and school membership. These aspects may also help to explain the very substantial differences we have found between immigrant and German pupils.

Before turning to the interpretation of the results one further issue needs to be addressed. The multivariate analyses are based exclusively on those children whose average grade in the subjects "German" and "Maths" is better than 3.6. Accordingly, all cases found in the category "3.6-6.0" of the variable "Mean" are excluded from the analyses. This is done because of a numerical problem. Children whose school performance is very poor, as indicated by an average grade worse than 3.5, will in general have no chance to attend the *Realschule* or the *Gymnasium*. Therefore, in the category "3.6-6.0" we find no cases that show a transition to these educational trajectories. Having a frequency of zero in a contingency table poses a serious problem in the logistic regression model resulting in a large estimated coefficient and an especially large estimated standard error. Hosmer & Lemeshow (1989: 128) suggest either to collapse the categories of the variable in a meaningful way to eliminate the problem or to eliminate the category all together. Defining new categories for the school marks is unsatisfactory in our case, because the categorisation was adjusted to the institutional regulations and should, therefore, not be altered. Instead, for the problem in question, it seems most appropriate to eliminate the last category. For children belonging to this category, poor school performance is a sufficient explanation, because in this case other factors will not be strong enough to substantively influence the transition. Accordingly the data base is cut down from 3139 to 2192 cases.

5.1 Controlling for achievement: Do ethnic differences remain?

Table 3 shows the estimates for the different models. The main models are presented in column 5 and 10. The other models are included for comparison purposes. The first model tests whether ethnic origin taken alone has an effect on the transition rates to secondary schooling. We find negative effects for all immigrant pupils. But only for Italian and Turkish children these effects are significant. Being of Turkish or Italian origin decreases the odds of attending the *Realschule & Gymnasium* by

nearly 80%.⁵ This pattern also appears in the corresponding Model 6 where we find an additional significant effect for *Aussiedler*. The effects are smaller than in Model 1; nevertheless, they remain strong for Turkish and Italian students. In comparison to their German age peers, the odds of attending the *Gymnasium* are decreased by 73% for Turks and 64% for Italians. In contrast, the negative effect for *Aussiedler* is less pronounced; their odds are decreased by 28%.

Table 3: Logistic regression analyses of educational outcomes

	Realschule & Gymnasium versus Hauptschule					Gymnasium versus Hauptschule & Realschule				
	1	2	3	4	5	6	7	8	9	10
NATIONALITY (ref. Germany)										
Turkey	-1,60** (0,16)	-1,60** (0,16)	-1,02** (0,20)	-1,88** (0,20)	-1,24** (0,29)	-1,32** (0,20)	-1,33** (0,20)	-0,31 (0,26)	-1,31** (0,23)	-0,65 (0,34)
Italy	-1,54** (0,26)	-1,55** (0,26)	-1,28** (0,33)	-1,65** (0,34)	-1,42** (0,49)	-1,01** (0,31)	-1,02** (0,31)	-0,27 (0,41)	-0,94* (0,39)	-0,53 (0,55)
Yugoslavia (former)	-0,55 (0,31)	-0,56 (0,31)	-0,30 (0,40)	-0,85* (0,37)	0,07 (0,53)	-0,27 (0,28)	-0,28 (0,28)	-0,02 (0,38)	-0,30 (0,35)	-0,37 (0,50)
Aussiedler	-0,26 (0,18)	-0,26 (0,18)	0,30 (0,21)	-0,48* (0,21)	0,11 (0,29)	-0,33* (0,14)	-0,33* (0,15)	0,28 (0,20)	-0,44* (0,18)	-0,00 (0,25)
Other	-0,24 (0,20)	-0,24 (0,20)	0,36 (0,24)	-0,39 (0,24)	0,29 (0,33)	-0,26 (0,17)	-0,26 (0,17)	0,49* (0,23)	-0,42* (0,21)	0,45 (0,28)
SEX (ref. male)		0,12 (0,11)	-0,50** (0,14)	0,67** (0,14)	0,01 (0,18)		0,08 (0,09)	-0,57** (0,13)	0,54** (0,12)	-0,06 (0,16)
MARKS										
GERMAN (ref. 1,0-2,4)										
2,5-3,0			-2,34** (0,33)					-2,65** (0,13)		
3,1-3,5			-4,32** (0,32)					-5,12** (0,30)		
3,6-6,0			-5,29** (0,35)					-5,45** (0,47)		
MATHS (ref. 1,0-2,4)										
2,5-3,0				-2,10** (0,21)					-2,54** (0,12)	
3,1-3,5				-3,69** (0,22)					-4,56** (0,32)	
3,6-6,0				-5,20** (0,31)					-5,95** (0,99)	
MEAN (ref. 1,0-2,4)										
2,5-3,0					-2,09** (0,44)					-4,18** (0,16)
3,1-3,5					-6,46** (0,43)					-7,61** (0,71)
Constant	1,61	1,55	4,67	3,56	5,09	-0,22	-0,26	1,83	0,99	2,20
Chi²	118,65 (df=5)	119,93 (df=6)	813,06 (df=9)	766,05 (df=9)	1408,64 (df=8)	67,58 (df=5)	68,39 (df=6)	1195,15 (df=9)	1055,11 (df=9)	1759,01 (df=8)
Pseudo-R²	0,05	0,05	0,36	0,34	0,62	0,02	0,02	0,41	0,36	0,60

n=2192

initial log-likelihood for models 1-5 = 2278,580

initial log-likelihood for models 6-10 = 2950,645

* statistically significant (p < .05)

** statistically significant (p < .01)

In Models 2 and 7 the variable “sex” is included. In both models the effect is negligible and not significant. However, “sex” gets significant when the grades in the school subjects “German” and

⁵ For the interpretation of the coefficients in a binary logistic regression model, it is useful to transform the β 's in the logit model to get the factor change in the odds of an event occurring: $[P(Y=1)/P(Y=0)]=\exp(\beta_i)$. The parameters can be interpreted in terms of odds ratios, that is for a unit change in x_i , the odds are expected to change by a factor of $\exp(\beta_i)$, holding all other variables constant. Or, to obtain the percentage change in the odds, the following transformation is required: $100[(P(Y=1)-P(Y=0))/P(Y=0)]=100*[\exp(\beta_i)-1]$. This quantity can be interpreted as the percentage change in the odds for a unit change in x_i , holding all other variables constant (cf. Long 1997: 79-82).

“Maths” are taken into account. The direction of the effects point to the well-known observation that girls do better in language subjects, boys better in mathematics. Holding the marks in “German” constant, girls are less likely than boys to attend the higher educational branches. In contrast, holding the marks in “Maths” constant, girls are more likely than boys to attend the *Realschule & Gymnasium*. The very same relationship is revealed in Models 8 and 9 regarding the transition to the *Gymnasium*. Once, these opposing effects are controlled for simultaneously (as in Models 5 and 10), they neutralise each other.

Furthermore, school marks considerably influence the transition rates. All effects are statistically significant and work in the expected direction. Poor achievement in “German” as well as in “Maths” reduces the likelihood of attending one of the higher educational trajectories. Achievement in “German” is a better predictor for the transition than is achievement in “Maths”. This is revealed for example in the difference in Chi^2 in Models 3 and 4 (as well as Models 8 and 9). In addition, we observe a difference in the effects of ethnic origin between the models including either the grades in “German” or in “Maths”. When controlling for “Maths”, the effect of nationality is stronger than in models that take into account exclusively the marks in “German”. This is true for both dichotomies of the dependent variable. In Model 8 the effects of ethnic origin even get insignificant when marks in “German” are being held constant. Thus, “German” is not only a better predictor for educational placement than is achievement in “Maths”; it also helps to reduce the effects of ethnic origin. Finally, Models 5 and 10 include the grade average of the subjects “German” and “Maths”. As expected, the variable “Mean” is a better predictor of the transition than achievement in “German” or “Maths” taken alone. This is reflected in the remarkable improvement of Pseudo- R^2 in Model 5 compared to Models 3 and 4 as well as in Model 10 compared to Models 8 and 9. The considerable increase in Chi^2 reveals the same pattern. These numbers also underpin the crucial role average achievement plays for the transition. The coefficients in Models 5 and 10 indicate that children's' chances to attend one of the higher educational branches are extremely reduced, once they obtain average grades below 2.4. For example, for pupils belonging to the category 2.5-3.0 the chances to attend one of the higher educational branches are decreased by 87% in Model 5, in Model 10 regarding the transition to the *Gymnasium* even by 99%.

What is left of ethnic differences when school marks have been controlled for? A substantial portion, as it appears in Model 5. Compared to their German age peers, the odds of attending the *Realschule & Gymnasium* are decreased for Turkish pupils by 71%, for Italian pupils by 76%. These effects are considerably strong and also statistically significant. In contrast, the effects for immigrant children from former Yugoslavia and *Aussiedler* are negligible and not significant. Model 10 presents a different picture. Here, the effects of ethnic origin are smaller and none of them is significant once average achievement is taken into account. Comparing Models 5 and 10, it appears that ethnic origin has a remarkable impact on the question whether a child will attend the *Hauptschule* or not. However, ethnic origin is not important for the question whether it will attend the *Realschule* or the *Gymnasium*.

5.2 Ethnic concentration and school membership

In this section, I investigate whether the ethnic concentration in the classroom and/or the school environment has an impact on the transition to secondary schooling. The ethnic concentration is operationalised as the percentage of immigrant pupils in the classroom; it is an aggregated context variable. School membership is included as a constant in the model, comprising the specific characteristics of each school; it represents a global context variable. Unfortunately, because of the limited number of schools included in the data set, it is not possible to control for more specific characteristics of the schools.

Before turning to the interpretation of the results, it should be stressed that the logistic regression model applied here may be inadequate to carry out the following analyses. This is due to the structure of the data: Pupils' transition outcomes concern characteristics at the individual level, while classrooms and schools provide group characteristics that are shared by several pupils. Accordingly, it is suggested to use multilevel modelling in order to take into account the special data structure (e.g. Snijders & Bosker 1999). Although the usual regression analysis will produce identical effects to multilevel regression analysis, the former method may cause problems with respect to the standard errors of the estimate. By only using the source of error at the individual level, the standard significance test ignores the error at the second level; as a result, the tests based on the standard errors and the explained variance are less reliable here (Kreft 1991: 49). Nevertheless, I will restrict the following analysis to binary logistic regression models. At this provisional stage, where I primarily want to know whether such effects are existing at all, this restriction seems to be justifiable. More sophisticated methods can be applied in a second step when there is reason to suspect that context effects play a role. Consequently, the following presentation of multivariate models should be understood in terms of a preliminary step asking for further elaboration.

Table 4 presents four different models for each dichotomy of the dependent variable. As contextual factors, Models 1 and 5 include the percentage of immigrants in the classroom. In both cases, we find small, but significant effects.⁶ As the coefficients refer to a 1%-increase in the ethnic concentration in the classroom, the small effect amounts to a considerable magnitude, when, for example, a 10%-change is considered. In this case, the chances to attend the *Realschule & Gymnasium* versus the *Hauptschule*, or the *Gymnasium* versus the *Realschule & Hauptschule* respectively, are decreased by 18%. Thus, learning in an environment with few immigrant pupils has a positive impact on the transition rates to the more demanding educational tracks, whereas an increasing percentage of immigrants in the classroom reduces the chances to attend these trajectories. But, in comparison to Model 5 in Table 3 or to Model 10 in Table 3, we only observe a small explanatory improvement as it is reflected in the increase of Chi^2 by 15.9 for Model 1 and by 10.0 for Model 5. Given 8 degrees of freedom, only the first value is significant at the 5%-level. Furthermore, controlling for the percentage of immigrant children in the classroom reduces in Model 1 (compared to Model 5 in Table 3) the

negative effects for Turkish and Italian children. Only for Italian pupils the coefficient remains significant. In Model 5 the effects of nationality nearly disappear and none is significant (except for the residual category). Finally, to test whether some nationalities suffered more than others from an increasing ethnic concentration in the classroom statistical interactions were examined; but none of the resulting interactions was statistically significant. From this I concluded, that the models can be interpreted without statistical interactions.

Table 4: Logistic regression analyses of educational outcomes

	<i>Realschule & Gymnasium versus Hauptschule</i>				<i>Gymnasium versus Hauptschule & Realschule</i>			
	1	2	3	4	5	6	7	8
NATIONALITY (ref. Germany)								
Turkey	-0,54 (0,33)	-0,43 (0,34)	-0,58 (0,33)		-0,04 (0,38)	0,08 (0,39)	-0,16 (0,38)	
Italy	-0,99* (0,50)	-0,97 (0,52)	-1,04* (0,52)		-0,22 (0,56)	-0,27 (0,57)	-0,36 (0,57)	
Yugoslavia (former)	0,59 (0,55)	0,95 (0,58)	0,84 (0,57)		-0,04 (0,52)	0,08 (0,53)	-0,02 (0,52)	
Aussiedler	0,21 (0,30)	0,12 (0,31)	0,02 (0,30)		0,09 (0,25)	0,02 (0,27)	-0,09 (0,26)	
Other	0,55 (0,34)	0,49 (0,35)	0,45 (0,35)		0,60* (0,29)	0,53 (0,29)	0,47 (0,29)	
MARKS MEAN (ref. 1,0-2,4)								
2,5-3,0	-2,04** (0,44)	-2,08** (0,44)	-2,09** (0,44)	-2,11** (0,44)	-4,19** (0,16)	-4,41** (0,17)	-4,39** (0,17)	-4,37** (0,17)
3,1-3,5	-6,44** (0,43)	-6,64** (0,44)	-6,64** (0,44)	-6,62** (0,44)	-7,58** (0,71)	-7,76** (0,71)	-7,75** (0,71)	-7,75** (0,71)
CONCENTR	-0,02** (0,01)	-0,01 (0,01)			-0,02** (0,01)	-0,02* (0,01)		
SCHOOL (ref. 0)								
1		-1,38* (0,58)	-1,46** (0,58)	-1,32* (0,57)		-1,46** (0,42)	-1,54** (0,41)	-1,53** (0,41)
2		0,34 (0,51)	0,17 (0,50)	0,27 (0,49)		0,33 (0,36)	0,13 (0,35)	0,16 (0,35)
3		0,19 (0,55)	0,05 (0,54)	0,17 (0,53)		-0,03 (0,38)	-0,17 (0,37)	-0,14 (0,37)
4		-0,67 (0,63)	-1,19* (0,52)	-1,25** (0,50)		-0,24* (0,51)	-0,91* (0,39)	-0,91** (0,37)
Constant	5,65	5,59	5,47	5,37	2,60	2,74	2,53	2,51
Chi²	1424,57 (df=8)	1453,66 (df=12)	1451,71 (df=11)	1439,20 (df=6)	1769,05 (df=8)	1807,31 (df=12)	1802,83 (df=11)	1799,19 (df=6)
Pseudo-R²	0,63	0,64	0,64	0,63	0,60	0,61	0,61	0,61

n=2192

initial log-likelihood for models 1-4 = 2278,580

initial log-likelihood for models 5-8 = 2950,645

* statistically significant ($p < .05$)

** statistically significant ($p < .01$)

In a next step, a constant for school membership is included (Models 2-4 and 6-8). In nearly all models we get significant negative effects for two schools. What does this mean? Schools 1 and 4 differ from the reference category regarding the transition to secondary schooling. Pupils attending these schools show a reduced likelihood to visit one of the higher educational trajectories; at the same time, they are more likely to attend the *Hauptschule* than pupils in the reference school. Compared to Models 1 and 5, controlling for school membership clearly improves the explanatory strength of the models as it is reflected in the increase in Chi², that is significant in all models, as well as in the increase in Pseudo-

⁶ As pointed out above, we need to be careful with the interpretation of the statistical significance, because the standard errors may be underestimated for these coefficients.

R². Once both, ethnic concentration and school membership, are taken into account as in Model 2, the coefficient for "Concentr" gets smaller and is not any more significant. Although it remains similar in size and significance in the corresponding Model 6, including this variable does not significantly improve the model, as the comparison of Chi² between Models 6 and 7 reveals. Thus, if at all, ethnic concentration plays a minor role for the explanation of differences in educational placement. Instead, school membership seems to be, at least at first sight, a more useful variable in our model. At the same time, it is a variable whose content is not further specified. What does school membership mean? Does it refer to the size of the school, to its geographic location, to a specific school climate or manner of regulating the transition procedure? The data does not allow to be more specific in this respect. Consequently, although the explanatory strength of the models, including school membership exceeds those that exclusively control for the ethnic concentration in the classroom, the character of the relationship cannot be disentangled for the time being. If the data set included more schools, particular characteristics, such as for example school size, could be distinguished. But with only a few schools in the data base, such differentiation is impossible. Consequently, the results must remain provisional at this stage.

Coming back to our initial question, we finally need to address the issue of ethnic differentiation in educational placement. Do ethnic differences remain? They do, but only for Italian pupils, and only concerning the question whether or whether not they attend the *Hauptschule*. For Turkish children, we also observe a negative effect – this time considerably smaller in size compared to the corresponding Model 5 in Table 3. However, the coefficient is not significant. Thus, only Italian children show a clear disadvantaged pattern once either the percentage of immigrant children or school membership is taken into account. Their chances to attend the *Realschule* & *Gymnasium* are decreased by more than 60%. In contrast, nationality has no impact for the question whether immigrant pupils rather attend the *Realschule* or the *Gymnasium* compared to German age peers. None of the coefficients of ethnic origin in Models 5-7 is significant and also their size approximates in most cases zero.⁷ Therefore, it is not surprising that the predictive strength of Model 8, that was estimated for comparison purposes excluding nationality, nearly matches those of Model 7. Chi² as well as Pseudo-R² are approximately identical for these models. Also, the size of the effects of achievement and school membership do not change compared to Model 7. In sum, when it comes to the decision for either *Gymnasium* or *Realschule* & *Hauptschule*, ethnic origin plays no role.

Summary and Conclusion

The paper examined ethnic differences in educational outcomes focusing on the degree of ethnic disadvantage in the German school system. The empirical analyses revealed that the most important aspect of ethnic disadvantage lies in the concentration of immigrant children in the *Hauptschule*.

Especially Italian and Turkish children are much more likely than their German counterparts to attend these schools and are accordingly underrepresented in the two more demanding types of secondary schooling. These differences remain also when controlling for the average achievement in the two central school subjects "German" and "Maths". At the same time, the extent of educational inequality varies between different ethnic groups. Our findings correspond to the well-known patterns of ethnic differentiation, with Italian and Turkish children obtaining the least desirable outcomes. Furthermore, ethnic origin has a considerable impact on the question whether a child will attend the *Hauptschule* or not. In contrast, ethnic origin is not important for the question whether it will attend the *Realschule* or the *Gymnasium*.

Regarding context effects no clear pattern was identified. Although I found weak effects for the ethnic concentration in the classroom as well as significant effects for school membership, it is not clear what kind of relationship these numbers exactly reveal. In order to proceed from here, I plan in a first step to use multilevel modelling in order to find out whether the identified effects of ethnic concentration are indeed statistically significant. In addition, it is necessary to think in more detail about the processes at work. As pointed out in section 2 of the paper, two mechanisms could play a role. The percentage of immigrant pupils in the classroom could point to relatively low achievement standards and a negative aspiration climate in the classroom influencing pupil's educational decisions. Simultaneously, the ethnic concentration in the classroom might serve as an indicator for teachers to judge the standing of their own class compared to other classes in other schools. In the transition situation, this could mean that teachers who deal with a less favoured population will be especially cautious and hesitating to assign their pupils to the higher educational trajectories because, compared to other schools, their students' chances to succeed are on average lower. It is quite obvious that the ethnic concentration is only a rough a measure that cannot be used to test for these kind of hypotheses. Hence, in order to uncover the mechanisms at work, more detailed information is required. A similar argument can be made with respect to the effects of school membership. Before we can arrive at any substantive conclusion about how school influences the transition rates, it is necessary to disentangle the processes summarised in the constant for school membership. For an elaborated empirical analysis, we would need to specify particular characteristics of the schools as well as to include an adequate number of schools.

⁷ The residual category "other" shows an exceptional pattern in this respect. In this group, however, a heterogeneous mix of different nationalities is summarised, so that no substantial interpretation is possible for pupils belonging to this category.

Reference

- Alba, Richard D., Johann Handl and Walter Müller (1994): Ethnische Ungleichheiten im deutschen Bildungssystem, *Kölner Zeitschrift für Soziologie und Sozialpsychologie* 46 (2): 209-237.⁸
- Anweiler, Oskar (1996): Deutschland, in: Anweiler, Oskar (ed.), *Bildungssysteme in Europa. Entwicklung und Struktur des Bildungswesens in zehn Ländern*, 4. Aufl., Weinheim: Beltz, S. 31-56.
- Bender, Stefan and Wolfgang Seifert (1996): Zuwanderer auf dem Arbeitsmarkt: Nationalitäten- und geschlechtsspezifische Unterschiede, *Zeitschrift für Soziologie* 25 (6): 473-495.
- Blossfeld, Hans-Peter (1988): Sensible Phasen im Bildungsverlauf. Eine Längsschnittanalyse über die Prägung von Bildungskarrieren durch gesellschaftlichen Wandel, *Zeitschrift für Pädagogik* 34 (1): 45-64.
- Bofinger, Jürgen (1990): *Neuere Entwicklungen des Schullaufbahnverhaltens in Bayern. Schulwahl und Schullaufbahnen an Gymnasien, Real- und Wirtschaftsschulen von 1974/75 bis 1986/87*, Staatsinstitut für Schulpädagogik und Bildungsforschung, Wissenschaftliche Reihe, München: Ehrenwirth.
- Büchel, Felix and Gert Wagner (1996): Soziale Differenzen der Bildungschancen in Westdeutschland - Unter besonderer Berücksichtigung von Zuwandererkindern, in: Zapf, Wolfgang et al. (ed.), *Lebenslagen im Wandel. Sozialberichterstattung im Längsschnitt, Sozio-ökonomische Daten und Analysen für die Bundesrepublik Deutschland 7*, Frankfurt: Campus, S. 80-96.
- Coleman, James S. (1966): *Equality of Educational Opportunity*, Washington: U.S. Government Print. Office.
- Dryler, Helen (1999): The Impact of School and Classroom Characteristics on Educational Choices by Boys and Girls: A Multilevel Analysis, *Acta Sociologica* 42: 299-318.
- Esser, Hartmut (1990): Familienmigration und Schulkarriere ausländischer Kinder und Jugendlicher, in: Esser, Hartmut et al. (ed.), *Generation und Identität. Theoretische und empirische Beiträge zur Migrationssoziologie*, Studien zur Sozialwissenschaft 97, Opladen: Westdeutscher Verlag, S. 127-146.
- Gang, Ira N. and Klaus F. Zimmermann (1996): *Is Child Like Parent? Educational Attainment and Ethnic Origin*, Working Paper, München.
- Haisken-DeNew, John P., Felix Büchel and Gert G. Wagner (1996): *Assimilation and other Determinants of School Attainment in Germany: Do Immigrant Children Perform as well as Germans?*, Working Paper 141, DIW, Berlin.
- Henz, Ursula (1997): Die Messung der intergenerationalen Vererbung von Bildungsungleichheit am Beispiel von Schulformwechseln und nachgeholtten Bildungsabschlüssen., in: Becker, Rolf (ed.), *Generationen und sozialer Wandel. Generationsdynamik, Generationsbeziehungen und Differenzierung von Generationen*, Opladen: Leske & Budrich, S. 111-133.
- Hosmer, David W. and Stanley Lemeshow (1989): *Applied Logistic Regression*, New York: Wiley.
- Jeschek, Wolfgang (1998): Integration junger Ausländer in das Bildungssystem kommt kaum noch voran, *DIW-Wochenbericht* 65 (24): 417-426.

⁸ This article is also available in English: Alba, Richard D., Johann Handl and Walter Müller (1994): *Ethnic Inequalities in the German School System*, Working Paper ABI/8, Mannheimer Zentrum für Europäische Sozialforschung, Mannheim.

- Kreft, Ita G. G. (1991): Using Hierarchically Linear Models to Analyze Multilevel Data, ZUMA-Nachrichten 29: 44-56.
- Long, John Scott (1997): Regression Models for Categorical and Limited Dependent Variables, Thousand Oaks: Sage.
- Mortimore, Peter et al. (1988): School Matters. The Junior Years, Wells: Open Books.
- Rutter, Michael (1979): Fifteen Thousand Hours: Secondary Schools and their Effect on Children, London: Open Books.
- Rutter, Michael (1983): School Effects on Pupil Progress: Research Findings and Policy Implications, Child Development 54: 1-29.
- Smith, David J. and Sally Tomlinson (1989): The School Effect. A Study of Multi-Racial Comprehensives, London: Policy Studies Institute.
- Snijders, Tom A. B. and Roel J. Bosker (1999): Multilevel Analysis. An Introduction to Basic and Advanced Multilevel Modeling, London: Sage.
- Wiese, Wilhelm (1986): Schulische Umwelt und Chancenverteilung. Eine Kontextanalyse schulischer Umwelteinflüsse auf die statusspezifischen Erfolgsquoten in der Klasse 10 und der Oberstufe des Gymnasiums, Zeitschrift für Soziologie 15 (3): 188-209.