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School Achievement of Immigrant Children: The Decreasing Influence of Ethnic Concentration

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Abstract There is an ongoing debate in many countries about the assumed negative influence of ethnically concentrated schools on pupils' cognitive development. This paper addresses the influence of concentrations of ethnic minority children in schools on the school achievement of their pupils. The analysis covers the period 1988–2004 and is based on a very large (60,000 pupils in each edition) longitudinal survey of the school achievement of primary school pupils, which was held every 2 years in the Netherlands. It reveals that the educational achievements of pupils from ethnic minority groups are improving, more so in arithmetic than in language. The paper examines whether ethnically concentrated schools make up the gap. We find that ethnically concentrated schools appear to become more and more adept at dealing with the educational disadvantage of ethnic minority children: they are making greater progress in educational achievement than schools with few ethnic minority children. Over the 15-year period studied, ethnically concentrated schools have removed around half the language disadvantage compared to 'white' schools, and as much as even three-quarters of the gap in arithmetic.

Keywords Educational achievement · Ethnic inequality · Ethnic composition · Primary school · Trends

Introduction

The proportion of ethnic minority pupils in educational systems in many countries around the world has been rising steadily in recent years. Earlier research has shown

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that these children already have a considerable learning disadvantage when they start at primary school and therefore derive less benefit from the teaching they receive in the rest of their educational careers (e.g. Driessen 2004; Heath et al. 2008; Schnepf 2007). The ethnic inequality in achievement is of great concern to many European governments as in the (near) future, ethnic minority children have to participate in the labour force on par with natives (Alba et al. 2011). Another concern is about the fact that ethnic minority pupils are much more often situated in schools where there are already large numbers of ethnic minority pupils. In both the public and political debate, it is generally assumed that the ethnic concentrations in the education system have an additional negative impact on school achievement. Also more generally, ethnic concentrations are thought to discourage the integration of ethnic minorities.

Studies on the effects of the concentration of ethnic minority pupils in schools on their school achievement generally suggest that pupils with a comparable socio-economic and ethnic background perform less at ethnically concentrated schools than at schools with few ethnic minority children (e.g. Coleman et al. 1966; Dronkers and Levels 2007; Entwisle and Alexander 1992; Mahard and Crain 1983). However, no consensus has been reached on these ‘ethnic schools effects’ (Dumay and Dupriez 2008; Fekjær and Birkelund 2007; Schnepf 2007). For some countries (e.g. France, Germany, Switzerland, US), indeed a negative impact of ethnic concentration on ethnic minorities’ educational achievement is found, whereas in Australia and Canada, ethnic concentration appears to even have a positive impact. In other European countries, such as the Netherlands, Norway, Sweden and the UK, the share in of ethnic minorities in school turned out to be relatively unimportant (Schnepf 2007). Especially in primary education, ‘ethnic school effects’ are generally found to be relatively slight (Van der Slik et al. 2006). This is a finding which has found little resonance in the public and political debate, where ethnic concentration in schools is consistently linked to disadvantage.

For the European context, the relationship between ethnic concentration and school achievement has to date predominantly been examined at a single point in time. Despite this, it seems that ethnic minority children in different European countries, for instance in Switzerland (Cattaneo and Wolter 2012) and the Netherlands (Gijsberts and Dagevos 2010), are currently making good part of their disadvantage in primary education. Though, the question as to what role ethnically concentrated schools have played in this is as yet unanswered for the European context.

In contrast to Western Europe, in the USA, more research has focused on changes in the inequality in educational achievement over time. Various studies showed that the inequality in educational performances amongst blacks/Latinos and whites decreased between the early seventies and the early nineties (Campbell, et al. 2000; Hedges and Nowell 1999; Jencks and Phillips 1998; Lee 2002). Only a few studies have addressed the question how the convergence in test scores was related to changes in family background and/or school characteristics (Cook and Evans 2000; Grissmer et al. 1998; Hedges and Nowell 1998; Berends et al. 2008). It turned out that for the USA, the improved socio-economic background of ethnic minority pupils mostly explains the trend in educational inequality. Recently, however, Berends and Peñaloza (2010) found that the tendency towards less inequality in mathematic achievement between blacks, Latinos, and whites has stalled. One of their main

conclusions is that increases in ethnic segregation within schools cause this stalled progress and that this outweighs the effect of positive changes in family background for blacks and Latinos.

The question as to how changes in educational achievement can be explained is important in terms of the dynamic character of integration processes. Which factors determine why ethnic minority children catch up? Is it simply because their family background improves? Or is it because schools get a better grip on these pupils? For the European context, these questions have not been answered yet. In this article, we use extensive longitudinal data from the Netherlands—spanning 15 years—to address the important question as to what extent ethnically concentrated schools in the Netherlands have succeeded in reducing educational disadvantage over time. In seeking to answer this question, we not only look at the relationship between ethnic concentration and the cognitive skills of pupils in primary schools, but also specifically at the *change* in this relationship. We also take into account the possible changes in the socio-economic composition of the pupil population.

Theoretical Assumptions

The Influence of Ethnic Concentration on School Achievement

Why should the ethnic concentration of primary school pupils have an impact on their school achievement? One frequently cited explanation, which is also put forward more generally to explain the relationship between concentration and integration, posits that ethnic concentration has a negative effect because the *opportunity* for contact with the indigenous population decreases as the number of immigrants living in a neighbourhood or attending a school rises (e.g. Briggs 2007; Mayer and Jencks 1989; Portes and Hao 2004). In ethnically concentrated neighbourhoods—schools—the chances of contact between the indigenous and immigrant population groups is logically smaller. On the other hand, the need to *invest* in the native language is also smaller if there are more members of one's own ethnic group living in the neighbourhood, as people can manage perfectly well by using their own language (Van Tubergen and Kalmijn 2009). The presumption that ethnic concentration will hinder the learning of new language is thus based primarily on the assumption that the children concerned will have less opportunity to come into contact with the destination country language.

Other explanations, especially those concerning peer-effects, are also offered for the effects of ethnic concentration, for example relating to levelling out effects (Fekjær and Birkelund 2007). The assumption here is that teachers at ethnically concentrated schools adapt to the average level of the pupils, bringing the danger that the brighter pupils in particular will receive too little stimulation. Besides stimulation by teachers, it is often argued that a higher resource level of the class creates a more stimulating learning environment for individual pupils. By helping each other and by working together, pupils can benefit from each other's knowledge, skills, and resources. According to this *resource theory*, pupils with the same ability would learn more in a school with 'good' pupils (Coleman et al. 1966; Schnepf 2007). Concerning ethnic concentration in particular, it is assumed that (non-western) ethnic minority pupils have

less resources than indigenous pupils. A high percentage of (non-western) ethnic minorities in a classroom is for that reason expected to have a negative effect on the achievement of all pupils involved.

Also within *normative reference theory*, it is stated that heterogeneous (ability) grouping has a positive effect on the achievement of lower ability pupils. The central idea is that pupils compare themselves with others and adjust their behaviour to dominant norms. In classrooms in which the average performance is higher, low ability pupils are supposed to be more attracted to learning and to be more motivated as they are stimulated to improve their achievement in order to identify with the higher-ability classmates (Hoxby 2000; Richer 1976). According to this, concentration of ethnic minority (lower-ability) pupils at school is expected to limit achievement.

Finally, the role of networks is frequently highlighted: immigrant parents all face the same language problems and show little commitment to the education system of the destination country (Alba et al. 2011; Heath et al. 2008). At an aggregated level (e.g. ethnically concentrated schools), this homogenous network could have a negative impact on children's school achievement.

However, there is also theorizing that assumes positive effects of ethnic concentration. It is assumed that teachers in ethnically concentrated schools are more able to specialize in teaching children who have learning difficulties or disadvantages. Moreover, it is suggested that the parental involvement will be higher in more homogenous schools and that there will be less discrimination, which is beneficial for the children's development (Dronkers 2010).

Can it be assumed that the effects of ethnic concentration on school achievement change over time? One reason could lie in educational disadvantage policies implemented by different countries. For example, in the Dutch educational system, disadvantaged ethnic minority pupils (children of immigrant parents with a low education level) used to be (in the period of this study) assigned a higher weighting than indigenous disadvantaged pupils. As a result, schools with a high proportion of ethnic minority children received more funding which they can use for things such as reducing class sizes or the appointment of additional staff. A growing concentration of ethnic minority pupils at these schools thus inevitably leads to a better financial position for the school. Few studies have to date been carried out into the relationship between the Dutch weighting policy and differences in educational performances over time (e.g. Claassen and Mulder 2011; Ledoux and Veen 2009; Mulder et al. 2005). Although it is relatively hard to examine the unique effects of the weighting system in particular (Driessen 2013; Ledoux and Veen 2009), the existing body of research give the impression that it is not beneficial in terms of reducing educational disadvantages (Claassen and Mulder 2011; Driessen 2013). Nevertheless, it seems likely that the weighting system indirectly has contributed to alleviating the educational disadvantage at 'ethnic schools'. If the weighting system had not been in place, disadvantaged pupils would for example have remained in larger classes in which they would by definition have received less personal attention. A comparison over time of the deployment of the additional staff and resources received by primary schools under the educational disadvantage policy shows that 'ethnic schools' more often use these resources for reducing class size (Driessen 2013) and for measures aimed at disadvantaged pupils, like language stimulation (Ledoux and Veen 2009). These schools also more frequently doubled the staff deployed for reading and arithmetic lessons (Gijsberts 2003).

A second line of reasoning—partly related to the availability of funding—is that ethnically concentrated schools acquire more and more experience as time goes by in teaching ethnic minority pupils, and are thus increasingly able to specialize. For example, schools with large numbers of ethnic pupils possess more expertise and offer greater support geared specifically to the target group (Crul and Holdaway 2009). The expertise that ethnically concentrated schools have increasingly built up in providing effective teaching for disadvantaged pupils is likely to play a role in the elimination of those educational disadvantages.

The hypothesis that ethnically concentrated schools have steadily improved their performance over recent years appears to be justified on the basis of these arguments. Reducing educational disadvantage on the part of ethnic minority pupils may therefore be (partly) due to the growing grip on the problem by ethnically concentrated schools. Finally, given that skills in language—more than in arithmetic—depend on factors outside the school (such as the language that pupils speak at home), it seems likely that schools will succeed in eliminating the achievement gap in arithmetic more quickly than in language.

Changes in the Composition of the Minority Population

The question as to the relationship between the changing influence of ethnic concentration and the making good of shortfalls can only be answered by taking into account changes that may have occurred in the composition of the various minority groups. For example, more and more ethnic minority children are today born in the Netherlands. Though heavily criticized, assimilation theories offer important leads for research on the integration of ethnic minorities. Assimilation theories (e.g. Gordon 1964) emphasize time as a crucial determinant for the integration of ethnic minorities. Integration processes demand a succession of generations. Whilst first generation immigrants are forced into the lowest parts of the stratification system, second generation offspring become more and more part of the receiving society, mainly as a consequence of educational participation. Integration proceeds as even newer generations appear. Based on assimilation theories, it may be expected that ethnic minority children born in the Netherlands will perform better at school than those who migrated to the Netherlands with their parents at an older age, amongst others because they will have less language difficulties (Heath et al. 2008). This means that an increase in the number of children from the second generation can be enough to explain the steady improvement in school achievement. Other authors, however, have stressed—in the context of segmented assimilation theory—that improving one's socio-economic position does not necessarily imply losing one's cultural roots (e.g. Portes and Zhou 1994). Moreover, a succession of generations does not by definition imply an improvement of socio-economic position as the situation of the Afro-American population in the USA has shown.

Another important change in the composition of the minority population relates to education level. Based on human capital theories, it can be expected that the more human capital immigrants possess, the more rapidly and better they will learn the language of the host country and the earlier they will secure a good position in society. Immigrants with a higher education level will therefore have little difficulty learning the destination country language. The existence of this relationship has already been established in earlier research (Van Tubergen and Kalmijn 2009). Education level not

only influences the language acquisition and social status of the immigrants themselves, but also that of their children. It plays a key part in determining the school success of (immigrant) children. Earlier research has shown that this has to do amongst other things with the cultural capital of the parents, such as reading books to their child or visiting parent meetings at school (e.g. Epstein 2001).

As a consequence of the increase in the second generation, the education level of the ethnic minority population in Europe is rising to a much greater degree than amongst the indigenous populations. A second explanation for the steadily improving achievement of ethnic minority pupils could therefore lie in the fact that their parents are becoming better educated on average. These two factors, both of which are related to the changing composition of the ethnic minority population, could offer an explanation for the reduction in the disadvantage of ethnic minority primary school pupils.

Data and Method

Data and Variables

The above hypotheses were subjected to empirical testing using data drawn from the PRIMA cohort survey. The achievements and school careers of primary school pupils have been studied periodically since the 1988/1989 school year. A time series is now available comprising seven editions of the survey (from the 1988/1989 to the 2004/2005 school year), spanning 15 years.¹ Each edition of this survey covered approximately 60,000 pupils in different year groups at more than 600 primary schools. A proportion of the schools, serving as the control group, is representative of all primary schools in the Netherlands (the 'national reference sample'). A further sample was also drawn of schools with an overrepresentation of pupils from ethnic minorities. In this article, the two samples are merged for the analysis of school achievement by ethnic minority pupils. For indigenous pupils, only the sample data from the national reference sample are used.

The analyses in this article focus on the achievement in (Dutch) language and arithmetic of pupils at the end of primary school (at the age of 11/12). The skills of all pupils in these core subjects were tested using standardized language and arithmetic tests from the pupil monitoring system developed by the National Institute for Educational Measurement (CITO). The language tests measure the general language skills of pupils in the Dutch language. They focus on three different aspects: morphology, grammatical correctness of sentences and the meaning of words and sentences. The arithmetic tests were closer than the language tests to the methods that are most commonly used in primary schools. Here again, a number of different arithmetical aspects were tested, such as mental arithmetic, decimals and fractions, percentages and ratios and measuring, time and money. The CITO scores have been converted to PRIMA arithmetic proficiency scores.² To facilitate a comparison over time of trends in school achievement, the figures for each year were standardized so that the relative

¹ There has been a new survey in 2007/2008 (the COOL survey); however, the language test was not replicated in this survey, so it could not be used in this analysis.

² A switch was made between the third and fourth measurements from arithmetic tests to CITO pupil monitoring measurements. However, it proved possible to convert the scores, thus avoiding a trend break.

position of pupils from ethnic minorities could be compared over the years. The numbers of correctly completed tests are converted to *t*-scores. These scores average 50 and have a standard deviation of 10 in the national reference sample for each test ending each year. This makes it possible to compare the achievements of different groups through the years. The language scores range from -17.78 to 68.32; the arithmetic scores range from 15.27 to 78.93.

The PRIMA database contains a number of independent variables that are relevant in explaining differences in achievement. First and foremost, there is the division into the target groups into categories that are relevant in the context of the present educational disadvantage policy. The school achievement of the four largest groups of ethnic minority pupils in the Netherlands (Turks, Moroccans, Surinamese and Antilleans) were compared with the achievements of indigenous non-disadvantaged pupils: pupils who are not assigned any additional weighting in the educational disadvantage policy.³ In addition, the indigenous disadvantaged pupils—children of parents with a low education level—were treated as a separate category since this group also has been assigned an additional weight in the Dutch educational system (but lower than that of ethnic minority children).⁴ Pupils from other ethnic groups are controlled for in the analyses. This group contains both pupils of Western European and American origin and pupils from other non-western immigrant groups (mainly refugee groups).⁵

One variable which separates pupils and parents of mixed origin (one indigenous and one ethnic minority parent) is included in the analyses as a control variable.⁶ This means that comparisons of the origin effects over time are not distorted by changes in the number of pupils with parents of mixed origin. A number of key individual characteristics of pupils were also added to the analysis, namely age (continuously ranging from 10 to 16), gender (0=boy, 1=girl), immigrant generation (0=born abroad, 1=born in the Netherlands) and education level of the parents. The latter was determined by the highest education level attained by one of the two parents. This education level was divided into four categories (maximum elementary education, pre-vocational/junior general secondary, senior secondary vocational/senior general secondary and higher professional/university). Missing values on age were imputed by the average age per school year. Since PRIMA databases from the different school years were combined in this article, a variable which measures the school year (1=1988/1989, 2=1994/1995, 3=1996/1997, 4=1998/1989, 5=2000/2002, 6=2002/2004, 7=2004/2005) was also added.⁷

³ We re-analyzed all our multilevel models without distinguishing between non-disadvantaged and disadvantaged indigenous pupils (with the total group of indigenous pupils as the reference group). These additional analyses all lead to the same findings.

⁴ The entire group of ethnic minority pupils, including non-disadvantaged pupils, is examined in this chapter. This is in fact a relatively small group: approximately 85 % of immigrant children in primary schools have been assigned a weight. Non-disadvantaged pupils are pupils where one parent has at least a junior general secondary education certificate. Indigenous disadvantaged pupils are children where both parents have completed no more than junior secondary vocational education.

⁵ The numbers are too small to enable these groups to be analyzed separately.

⁶ The origin of immigrant parents with a mixed relationship is very diverse. Some originate from Turkey, Morocco, Suriname or the Netherlands Antilles; however, the majority originate from other countries in Asia, Africa, Southern or Western Europe.

⁷ There is one exception to the linear parameterization: from the first to the second measurement point. Therefore, we re-analyzed our models from the school year 1994/1995 onwards (for this time period the spacing between each round of the PRIMA survey is even). These analyses yield the same results.

The percentage of ethnic minority pupils at a school was calculated on the basis of the pupil data in the PRIMA study. These data are available for the different year groups surveyed in the PRIMA data (at the age of 5/6, 7/8, 9/10 and 11/12). The percentage of ethnic minority pupils at a school was determined by calculating the average of these shares.⁸ The percentage of ethnic minority pupils at a school is divided into five dummy variables (0–10, 10–25, 25–50, 50–75, and 75–100 %). The higher the percentage, the higher the ethnic concentration of the school. Schools within the category with fewest immigrant children (0–10 %) are labelled ‘white schools’; schools with high ethnic concentrations (50–75 and 75–100 %) are labelled ‘ethnically concentrated schools’.

In international research, also ethnic diversity is seen as an important explanatory variable at the school level. However, in the Netherlands, ethnic homogeneous schools hardly at all exist. Also, the few Islamic schools that exist have pupils from different ethnic origins (e.g., Turkish, Moroccan etc.). The same holds for neighborhoods in the Netherlands (see Gijsberts et al. 2012). The correlation between ethnic concentration and ethnic diversity of schools is above .9 (see Herweijer 2011). This means that both variables cannot be included at the same time in the analyses. Moreover, the findings do not change when including ethnic diversity instead of ethnic concentration. Also, for the Dutch situation, we found that the correlation between the parental educational level at the school level and the percentage of ethnic minority pupils in the school is high (around 0.8 in every school year). Ethnically concentrated schools in the Netherlands are by and large schools with on average low educated parents. Therefore, we decided not to include the educational level of the parents at the school level to avoid problems of collinearity. For the descriptives of the independent variables, see Table 1.

Method of Analysis

Our hypotheses were tested using multilevel regression techniques (Snijders and Bosker 1999) with pupils nested in schools. All models were estimated with MLWIN. Improvement in model fit is indicated by the percentage of variance explained. We built up our multivariate models carefully in which we increased the complexity in stages. The tests for significance were performed one-sided. In initial models, we also included a quadratic term for the educational level of the parents, to check for non-linear effects. Since these effects turned out to be absent, we did not include them in our final models. By adding interaction effects between ethnic groups and time into our multilevel models, we test whether changes over time in language and arithmetic achievement are statistically significant.⁹

⁸ This is the total percentage of all minority groups. We also looked at the percentage of the four largest minority groups in the Netherlands (Turks, Moroccans, Antilleans, and Surinamese). The correlation between both measures is very high (in each year above 0.95). So, it does not matter much which one to choose.

⁹ Centering of the (metric) independent variables has been performed, and multicollinearity statistics have been checked.

Table 1 Descriptives of the independent variables per school year, 1988/1989–2004/2005

	Min	Max	1988/1989		1994/1995		1996/1997		1998/1999		2000/2001		2002/2003		2004/2005	
			Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Age	10	16	11.40	0.58	11.49	0.59	11.47	0.57	11.47	0.58	11.47	0.58	11.46	0.57	11.46	0.58
Gender (1 = girls)	0	1	0.50	0.50	0.51	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.49	0.50
Origin category																
Turkey	0	1	0.08	0.27	0.09	0.28	0.08	0.27	0.08	0.26	0.07	0.26	0.08	0.27	0.08	0.27
Morocco	0	1	0.08	0.28	0.08	0.26	0.07	0.26	0.07	0.25	0.07	0.26	0.07	0.25	0.07	0.26
Suriname	0	1	0.07	0.25	0.05	0.22	0.04	0.20	0.05	0.21	0.04	0.20	0.03	0.17	0.03	0.16
Antilles	0	1	0.01	0.08	0.01	0.08	0.01	0.08	0.01	0.09	0.01	0.10	0.01	0.10	0.01	0.09
Indigenous-low	0	1	0.15	0.35	0.24	0.43	0.24	0.43	0.22	0.42	0.19	0.39	0.16	0.37	0.14	0.34
Indigenous-high	0	1	0.33	0.47	0.35	0.48	0.39	0.49	0.44	0.50	0.46	0.50	0.48	0.50	0.52	0.50
Immigrant generation (1 = 2nd generation)	0	1	0.90	0.30	0.97	0.16	0.93	0.25	0.94	0.24	0.94	0.23	0.92	0.27	0.94	0.23
Educational level parents	0	4	2.75	0.89	2.42	0.97	2.48	0.97	2.56	0.98	2.66	0.98	2.70	0.97	2.81	0.97
% ethnic minority pupils at school																
0–10 %	0	1	0.29	0.45	0.36	0.48	0.38	0.48	0.38	0.49	0.38	0.49	0.37	0.48	0.39	0.49
10–25 %	0	1	0.29	0.46	0.23	0.42	0.21	0.41	0.20	0.40	0.20	0.40	0.20	0.40	0.20	0.40
25–50 %	0	1	0.22	0.41	0.16	0.36	0.15	0.36	0.17	0.38	0.18	0.38	0.19	0.39	0.17	0.37
50–75 %	0	1	0.11	0.32	0.11	0.31	0.11	0.31	0.11	0.32	0.11	0.31	0.10	0.30	0.09	0.29
75–100 %	0	1	0.08	0.28	0.15	0.36	0.15	0.36	0.13	0.34	0.14	0.34	0.15	0.35	0.15	0.36
N			3855		8115		9574		8684		9778		9768		10,221	

Findings

Trends in School Achievement of Ethnic Minority Pupils

Before performing a multivariate analysis of trends in school achievement, it is useful to examine how the trends in school achievement have developed in the past 15 years. Figure 1 shows how much of the achievement gap in language compared with non-disadvantaged indigenous pupils has been eliminated within the 15-year period (see also Appendix 1). We decided to present the difference in achievement scores compared to non-disadvantaged indigenous pupils (on the y-axis) instead of the actual achievement scores to be able to see to what extent the different groups catch up over the years. Related to non-disadvantaged indigenous pupils, ethnic minority pupils have made up between 23 and 45 % of their original language disadvantage. Turkish children record the lowest achievement in language, closely followed by Antillean pupils. The improvement amongst Moroccan pupils is the most spectacular (45 %). However, in language, Turkish and Moroccan pupils (together with Antillean pupils) still trail Surinamese pupils, the best performing ethnic group, by a considerable margin. Even Surinamese pupils, though—like disadvantaged indigenous pupils—lag well behind indigenous pupils who are not in the disadvantaged groups.

Pupils from ethnic minorities have a much smaller disadvantage in arithmetic than in language. On average, Antillean pupils achieve the lowest scores on arithmetic. Turkish and Moroccan children perform virtually as well as disadvantaged indigenous pupils. The gains made by both Moroccan and Turkish pupils in arithmetic are spectacular. Over the 15-year period, they reduce the gap that existed in 1988/1989 by half (Fig. 2, see also Appendix 1). Surinamese children eliminate more than a third of their disadvantage. In arithmetic, Turkish and Moroccan pupils are now achieving better results than the Surinamese pupils. Antillean pupils make only little progress (10 %).

* Differences in standardised scores for language achievement between non-disadvantaged indigenous pupils and pupils from the other categories: test scores are standardised for each year ($M = 50$; $SD = 10$).

* Both parents have completed at most a junior secondary vocational education (indigenous disadvantaged pupils).

Source: PRIMA 1988/'89; 1994/'95; 1996/'97; 1998/'99; 2000/'01; 2002/'03; 2004/'05. Authors' calculations.

Fig. 1 Disadvantage relative to non-disadvantaged indigenous pupils in language achievement, 1988/1989–2004/2005

Fig. 2 Disadvantage relative to non-disadvantaged indigenous pupils in arithmetic achievement, 1988/1989–2004/2005

In addition, the steady fall in the achievement of indigenous disadvantaged pupils is striking. Whilst the achievements of pupils from ethnic minorities have steadily improved, indigenous pupils whose parents have a low education level have fallen further behind. It is however important to place this in context; despite the downturn in their school achievement, disadvantaged indigenous pupils are still well ahead of all groups of ethnic minority children.

Influence of Ethnic Concentrations on Primary School Achievement

Tables 2 and 3 portray the extent to which 'ethnic school effects' occur. These multilevel analyses show that the degree of ethnicity of the school has a relatively minor influence on achievement: only 9 % of the differences between schools in language achievement and 3 % of the differences in achievement in arithmetic correlate with the proportion of ethnic minority pupils at school. This can be seen from the declining variance components after inclusion of the ethnic composition of the school (between model 3 and model 4). This same pattern is found in other research on the effects of ethnic school composition (Driessen 2002). The data do show that where 'ethnic school effects' occur, they do so most prominently at schools where more than half the pupils are from ethnic minorities (see the coefficients of the percentage of ethnic minority pupils in model 4).

The main differences between schools in terms of pupil achievement are not caused by the ethnicity of the school as such, but by the composition of the pupil population. Tables 2 and 3 make this clear: after controlling for individual differences between pupils, the lion's share of the variants at school level disappears. For example, the variance between schools in language achievement falls from 28.50 (model 0) to 6.34 after incorporation of all individual characteristics in model 3.

Table 2 Multilevel regression analysis of language achievement at the end of primary school, 1988/1989–2004/2005

	Model 0	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	47.45** (0.15)	51.98** (0.19)	49.64** (0.25)	42.58** (0.34)	43.19** (0.32)	43.38** (0.34)
Origin category (indigenous-high ^a =ref. cat.)						
Turkey		-16.36** (0.41)	-14.96** (0.40)	-11.08** (0.41)	-10.43** (0.42)	-8.99** (0.49)
Morocco		-13.47** (0.45)	-12.07** (0.44)*	-8.05** (0.45)*	-7.32** (0.46)	-5.86** (0.53)
Suriname		-9.3** (0.53)	-8.49** (0.52)	-6.40** (0.52)*	-5.66** (0.52)	-4.32** (0.57)
Antilles		-12.39** (1.12)	-10.77** (1.10)	-8.43** (1.09)	-7.87** (1.10)	-6.64** (1.12)
Indigenous-low ^b		-3.94** (0.25)	-3.64** (0.25)	-0.72** (0.26)	-0.81** (0.26)	-0.73** (0.26)
Other ethnic group		-9.79** (0.44)	-8.28** (0.44)	-6.17** (0.44)	-5.69** (0.44)	-4.61** (0.49)
School year (1988/1999=1, 2004/2005=7)		0.02 (0.04)	0.01 (0.04)	0.01 (0.04)	0.01 (0.04)	0.05 (0.04)
Origin × school year						
Turkey × school year		0.79** (0.08)	0.71** (0.08)	0.56** (0.08)	0.57** (0.08)	0.25** (0.10)
Morocco × school year		0.67** (0.09)	0.60** (0.09)	0.53** (0.09)	0.53** (0.09)	0.20* (0.11)
Suriname × school year		0.50** (0.11)	0.45** (0.11)	0.37** (0.11)	0.37** (0.11)	0.07 (0.12)
Antilles × school year		0.43 (0.22)	0.42 (0.22)	0.33 (0.22)	0.36 (0.22)	0.08 (0.22)
Indigenous-low × school year		-0.17** (0.06)	-0.14** (0.05)	-0.13** (0.05)	-0.12* (0.05)	-0.14** (0.05)
Other ethnic group × school year		0.50** (0.09)	0.48** (0.09)	0.45** (0.09)	0.46** (0.09)	0.22** (0.10)
Gender (boys=ref. cat.)						
Girls			0.28** (0.07)	0.31** (0.07)*	0.32** (0.07)	0.32** (0.07)
Immigrant generation (born abroad=ref.cat)						
Born in the Netherlands			1.37** (0.17)	1.48** (0.17)	1.44** (0.17)	1.47** (0.17)
Age			-2.84** (0.06)	-2.63** (0.06)	-2.62** (0.06)	-2.62** (0.06)
Education level of parents				2.13** (0.05)	2.07** (0.06)	2.07** (0.06)

Table 2 (continued)

	Model 0	Model 1	Model 2	Model 3	Model 4	Model 5
% ethnic minority pupils at school (0–10 % = refcat.)						
10–25 %					–0.11 (0.15)	–0.06 (0.32)
25–50 %					–1.05** (0.20)	–2.45** (0.43)
50–75 %					–2.07** (0.25)	–4.38** (0.53)
75–100 %					–2.46** (0.25)	–4.50** (0.54)
School year × % ethnic minority pupils						
School year × 10–25 %						0.01 (0.07)
School year × 25–50 %						0.33** (0.09)
School year × 50–75 %						0.54** (0.11)
School year × 75–100 %						0.45** (0.11)
Variance components						
Between schools	28.50** (1.18)	7.23** (0.37)	7.20** (0.37)	6.34** (0.34)	5.80** (0.31)	5.77** (0.31) *
(% explained relative to previous model)		75 %	1 %	14 %	9 %	1 %
Between pupils	88.68** (0.50)	82.44** (0.47)	79.70** (0.45)	78.20** (0.44)	78.18** (0.44)	78.14** (0.44)

Test scores have been standardized ($M=50$, $SD=10$); $N=63,549$

^a One parent has completed at least junior general secondary education (non-disadvantaged indigenous pupils)

^b Both parents have completed at most junior secondary vocational education (disadvantaged indigenous pupils)

** $p<0.01$

* $p<0.05$

Table 3 Multilevel regression analysis of arithmetic achievement at the end of primary school, 1988/1989–2004/2005

	Model 0	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	48.28** (0.12)	51.63** (0.20)	51.64 ** (0.27)	45.54 ** (0.33)**	46.04** (0.35)**	45.89** (0.36)
Origin category (indigenous-high ^a =ref. cat.)						
Turkey		−8.51** (0.43)	−7.01** (0.42)	−3.71** (0.43)	−3.25** (0.43)	−2.70** (0.50)
Morocco		−9.08** (0.48)	−7.41** (0.46)	−3.98 ** (0.48)	−3.52** (0.48)	−2.99 ** (0.55)
Suriname		−8.35** (0.55)	−7.57** (0.54)	−5.78** (0.54)	−5.27** (0.54)	−4.78** (0.59)
Antilles		−9.70** (1.18)	−8.36** (1.15)	−6.41** (1.14)	−6.02** (1.14)	−5.95** (1.16)
Indigenous-low ^b		−4.16** (0.26)	−3.77** (0.25)	1.25** (0.26)	−1.30** (0.26)	−1.24** (0.27)
Other ethnic group		−5.01** (0.46)	−3.67** (0.45)	1.88** (0.45)	−1.53** (0.46)	−1.18** (0.49)
School year (1988/1989=1, 2004/2005=7)		−0.07* (0.04)	−0.03 (0.04)	−0.05 (0.04)	−0.04 (0.04)	−0.01 (0.05)
Origin × school year						
Turkey × school year		0.54** (0.09)	0.43** (0.08)	0.31** (0.08)	0.30 ** (0.08)	0.17* (0.10)
Morocco × school year		0.47** (0.10)	0.34** (0.09)	0.29** (0.09)	0.27 ** (0.09)	0.15 (0.11)
Suriname × school year		0.44** (0.12)	0.40 ** (0.12)	0.33** (0.12)	0.31** (0.12)	0.20 (0.13)
Antilles × school year		0.17 (0.24)	0.20 (0.23)	0.14 (0.23)	0.14 (0.13)	0.04 (0.23)
Indigenous-low × school year		−0.18** (0.06)	−0.15** (0.05)	−0.14** (0.06)	−0.13** (0.06)	−0.15** (0.06)
Other ethnic group × school year		0.26** (0.09)	0.23** (0.09)	0.21** (0.09)	0.20** (0.09)	0.12 (0.10)
Gender (boys=ref. cat.)						
Girls			−3.05** (0.07)	−3.03** (0.07)	−3.02** (0.07)	−3.02** (0.07)
Immigrant generation (born abroad=ref.cat)						
Born in the Netherlands			0.57** (0.18)	0.68** (0.18)	0.67** (0.18)	0.69** (0.18)
Age			−3.08** (0.07)	−2.90** (0.07)	−2.90** (0.07)	−2.90** (0.07)
Education level of parents				1.84** (0.06)	1.81** (0.06)	1.81** (0.06)

Table 3 (continued)

	Model 0	Model 1	Model 2	Model 3	Model 4	Model 5
% ethnic minority pupils at school (0–10 % = refcat.)						
10–25 %					–0.29* (0.17)	0.33 (0.35)
25–50 %					–1.18** (0.23)	–0.88* (0.46)
50–75 %					–1.76** (0.28)	–3.28** (0.57)
75–100 %					–1.39** (0.29)	–1.89** (0.58)
School year × % ethnic minority pupils						
School year × 10–25 %						–0.15* (0.07)
School year × 25–50 %						–0.06 (0.09)
School year × 50–75 %						0.37** (0.12)
School year × 75–100 %						0.10 (0.11)
Variance components						
Between schools	18.84** (0.83)	11.01** (0.54)	11.30** (0.54)	10.72** (0.51)	10.42** (0.50)	10.37** (0.50)
(% explained relative to previous model)		42 %	0 %	5 %	3 %	1 %
Between pupils	90.59** (0.53)	86.83** (0.50)	81.74** (0.47)	80.61** (0.47)	80.59** (0.47)	80.57** (0.47)

Test scores have been standardised ($M=50$, $SD=10$); $N=60,961$

^a One parent has completed at least junior general secondary education (non-disadvantaged indigenous pupils)

^b Both parents have completed at most junior secondary vocational education (disadvantaged indigenous pupils)

** $p<0.01$

* $p<0.05$

This has to do with the fact that children at ethnically concentrated schools much more frequently come from families where the parents have a low education level; the parents of Turkish and Moroccan children, in particular, have frequently had little or no formal education. The analyses show that the education level of the parents is important for their children's level of achievement in language and arithmetic at school (model 3). It is also clear that children born in the Netherlands perform considerably better than children who came to the Netherlands whilst already of school age (model 2). In addition, the analyses show that girls perform markedly better in language, whilst boys do better in arithmetic (model 2). This gender difference has already been established in plenty of earlier research, and holds both for indigenous and ethnic minority pupils (e.g. Dekkers et al. 2000).

Changes in the Composition of the Minority Population

It is apparent from the foregoing that, despite the considerable disadvantage of ethnic minority pupils in language, in most minority groups, the disadvantage reduced significantly. This can be seen clearly from the positive interaction effects between origin group and school year in the first model in Table 2 (language) and Table 3 (arithmetic). The main negative effects of origin suggest that the achievements of ethnic minority groups are all weaker than those of indigenous non-disadvantaged pupils (the reference group). However, the positive interaction effect between school year and origin shows that this *disadvantage* relative to indigenous pupils reduced between 1988/1989 and 2004/2005.

The multilevel analyses examine whether an explanation can be found for this trend. One explanation put forward for the improvement in achievement lies in changes in the composition of the minority population. For example, more and more ethnic minority children are born in the Netherlands, whilst the education level of ethnic minorities in general is steadily increasing. The analyses show that both the increase in the proportion of ethnic minority children born in the Netherlands as well as the increase in the education level of parents do explain the rising trend in language and arithmetic achievement for Turkish, Moroccan and Surinamese pupils (Tables 2 and 3). This can be seen from the decrease in the interaction effects of origin with school year between the models 1, 2 and 3 (after inclusion of immigrant generation and parents' education level): for example for Turkish children for language achievement, it reduces from 0.79 to 0.56. Of course, changes in the composition of the population take place only slowly, and more time will therefore be needed in order to observe any significant effects. Yet, it has become apparent during the last 15 years that the increase in the proportion of the second generation in primary education as well as the increase in the education level of ethnic minority parents leads to an improvement—albeit slight—in children's school achievement.

Reducing 'Ethnic School' Effects

Whilst it should be stressed yet again that the 'ethnic school effects' are slight, the analyses show that ethnically concentrated schools have over time been

more beneficial for pupils from ethnic minorities. This can be seen from the fact that these effects declined considerably, as illustrated by the significant positive interaction effects in model 5 (Table 2) between school year and the percentage of ethnic minority pupils at a school. The main effect of the proportion of ethnic minority pupils on school achievement is consistently negative (concerning language achievement from as little as 25 % ethnic minority pupils at the school), but including a coefficient that takes into account the trend in the effect of the proportion of ethnic minority pupils—the interaction effect—reduces this negative effect. These interaction effects are significant for language subjects if more than a quarter of the pupils are from ethnic minorities. For arithmetic, this is only so for schools with 50–75 % ethnic minority pupils (see Table 3).

The analyses not only show that ethnically concentrated schools have been performing steadily better compared to schools with few ethnic minority children, but also provide an insight into the influence this has had on the school achievement of the different groups of ethnic minority pupils. As Tables 2 and 3 show, the reducing ‘ethnic school effects’ are a key reason for the improving trend in the achievement of ethnic minority pupils in language and arithmetic. The trend effects of ethnic origin decline substantially when the trend in ‘ethnic school effects’ is included in the model (model 5). In some origin groups, they are no longer significant. Model 4 still shows significant interaction effects between origin and school year (with the exception of Antillean pupils who, as the previous section showed, have not made any relative gains). After allowing for the interaction between school year and ethnic composition of the school, these effects largely disappear. This means that the improvements made by schools explain almost entirely the improvement by the different groups of ethnic minority pupils (with the exception of Antillean pupils) compared with non-disadvantaged indigenous pupils. For Surinamese pupils, the progress in eliminating the language gap can be ascribed entirely to the schools, whilst this is the case for more than half the improvement amongst Turkish and Moroccan pupils (the interaction coefficient falls from 0.57 and 0.53 to respectively 0.25 and 0.20). The improvement in arithmetic can also be attributed for a large part to the school. Also here, the coefficient turns insignificant for Moroccan and Surinamese pupils and is reduced by half for Turkish pupils. In short, ethnic minority pupils perform less and less badly at an ethnically concentrated school.

Ethnically concentrated schools have thus succeeded in reducing the disadvantage of ethnic minority pupils over the last years. This is portrayed in another way in Figs. 3 and 4 (based on the findings in Tables 2 and 3, models 5). The figure shows that the biggest improvement has taken place at schools where more than half the pupils are of ethnic origin. These ethnically concentrated schools have more than halved the gap in language achievement compared with ‘white schools’ (0–10 % ethnic minority pupils). But even schools with between 25 and 50 % ethnic minority pupils have made good a substantial part of the disadvantage. In fact, there are now virtually no disadvantages in arithmetic: three-quarters of the shortfall in arithmetic achievement has been eliminated by ethnically concentrated schools.

^a These relationships take into account the other characteristics in the analysis models (based on multilevel models)
 Source: PRIMA 1988/89; 1994/95; 1996/97; 1998/99; 2000/01; 2002/03; 2004/05. Authors' calculations.

Fig. 3 Relationship between the percentage of immigrant pupils at school and language achievement, 1988–2004

The relatively greater improvement in arithmetic may have to do with the method of testing: the arithmetic tests bear more relation than the language tests to what the pupils learn at school, whereas the language tests are aimed more at mapping out the general development in pupils' proficiency in the Dutch language. In addition, apart from the method of testing, language proficiency also depends to a greater extent than proficiency in arithmetic on all manner of influences on the pupil outside the school, such as the language used by their parents, the language they use with their peers and the reading behaviour of the pupil.

^a These relationships take into account the other characteristics in the analysis models (based on multilevel models)
 Source: PRIMA 1988/89; 1994/95; 1996/97; 1998/99; 2000/01; 2002/03; 2004/05. Authors' calculations.

Fig. 4 Relationship between the percentage of immigrant pupils at school and arithmetic achievement, 1988–2004

Conclusion and Discussion

More and more young people in many European countries are today of non-Western origin. Accordingly, ethnically concentrated schools have become both inevitable and commonplace especially in the larger European cities. A good deal of attention in the debate on ethnic concentration is focused on the presumed negative influence exerted by these schools. As this article confirms, the school achievement of pupils at ethnically concentrated schools is indeed below that of pupils at schools with few ethnic minority children. However, the negative effect of the school should not be overstated. Most of the difference in achievement has not to do with the ethnicity of the school, but with socio-economic differences; children at ethnically concentrated schools often come from low socio-economic backgrounds, and this is a very strong determinant of school achievement, which has been shown extensively in previous research (see e.g. Alba et al. 2011; Heath et al. 2008; Szulkin and Jonsson 2007).

Regarding changes over time, we find that ethnic minority pupils make up a considerable amount of their disadvantage over the 15 years we were able to study, although this applies more for arithmetic than for language. This article also shows that ethnically concentrated schools have played a role in reducing these gaps; they have reduced the language deficit relative to 'white schools' (less than 10 % ethnic minority pupils) by half in 15 years, and the discrepancy in arithmetic by no less than three-quarters. Despite the fact that the achievement gap in arithmetic have been reduced to a greater extent than the language gap, the ground made up in language proficiency could in fact be assigned greater significance, given that the starting position of the ethnic minority pupil population is much more unfavourable in language than in arithmetic. Moreover, command of the destination country language is much more dependent than arithmetical proficiency on factors over which the school has no influence, such as the language that ethnic minority pupils speak at home.

The catching up trend over time we found in this article is important for research on integration processes of ethnic minority children in Europe. Integration processes are time consuming, and, to study such dynamic processes properly, long time series are needed. The data used in this article are unique in this respect, at least for the European context. Educational disadvantages are persistent (see Alba et al. 2011; Heath et al. 2008), but we have seen that the gap with indigenous children—in the Netherlands—decreased over a period of 15 years. Part of the improvement in achievement turned out to be due to changes in the composition of the ethnic minority population: the parental educational level of ethnic minorities is for example steadily increasing. This has also been found in the USA for the decreasing inequality in educational achievement between blacks/Latinos and whites (e.g. Jencks and Phillips 1998). The time perspective also turned out to be useful to study ethnic concentration effects. There has been a lot of research on effects of ethnically concentrated schools or neighbourhoods on different integration outcomes. Although the effects found are generally small (with the exception of neighbourhood effects on interethnic contacts), they often turn out to have a negative sign. With the repeated cross-sectional data we used, we were able to show that these context

effects, however, are not stable over time and that changes in these context effects can help to explain decreasing ethnic inequalities.

However, we also have to face some (methodological) limitations of this study. There is, for example, the problem of causality or self selection. Theoretically, in this article as in many previous studies, the main assumption is that contextual characteristics influence individual outcomes (e.g. Driessen 2002; Sampson et al. 2002). However, the correlation between individual outcomes and contextual characteristics may reflect causal effects but may also be (partly) reflecting self-selection bias: the better integrated migrants move out of ethnically concentrated schools or neighbourhoods, whilst the less integrated stay (see, e.g., Johnson et al. 2002). In future studies, panel designs are urgently needed to address this issue (for good examples see Hanushek et al. 2009 and Johnson 2011).

Selection processes may also take place over time. There may be changes in the selection of immigrants to a destination country (either because of events in the country of origin or because of changes in migration policies in destination countries), and this may ultimately cause a change in ethnic gaps in educational achievement (Cattaneo and Wolter 2012). However, for our findings, this mechanism can at most play a minor role, since in the ethnic minority groups, we study there has been only limited inflow of new immigrant children in the past years. Secondly, by controlling for the educational level of parents over time, we control for changes in the educational level of parents, which we believe is a good proxy for these selection effects. And, thirdly, the pupils in our survey are from origin countries where in the period we study no dramatic changes have taken place (no economic shocks, violent conflicts or the like). However, we cannot fully rule out that these over-time selection processes take place.

Another limitation of our study concerns the mechanisms behind the decreasing ethnic school effects. We were not able to directly test why these effects decrease over time. It can be that the educational policy was successful in eliminating the achievement gap; it can also be that ethnically concentrated schools have developed effective strategies to deal with disadvantages of ethnic minority children. We need cross-national comparative studies to test these hypotheses. Further research would also be welcome on the question of whether the relative achievement of ethnic minority children improves more at ethnically concentrated schools than at schools with few ethnic minority children. The question of how the school achievement of indigenous children (especially the disadvantaged ones) has developed at both types of school is also relevant here.

Of course, the effects of ethnic concentration for the integration of ethnic minority children extend not only to school achievement. However, much less is known about the effects of ethnically concentrated schools on for instance normative views or interethnic contacts. Research on these important social questions is urgently needed. Where there are high concentrations of ethnic minority children at a school, it seems likely that ethnic minority children will have little contact with indigenous pupils, and this may have adverse consequences for the integration of these children.

Appendix 1

Table 4 Language and arithmetic achievement at the end of primary school by ethnic group and school year, 1988/1989–2004/2005

	1988/1989	1994/1995	1996/1997	1998/1999	2000/2001	2002/2003	2004/2005
Language							
Turkey	34.32 (11.66)	36.41 (9.23)	37.61 (10.04)	37.21 (9.77)	38.81 (9.65)	39.33 (9.65)	40.29 (8.95)
Morocco	34.72 (12.04)	38.79 (9.61)	39.18 (10.36)	40.53 (10.39)	40.78 (9.89)	42.00 (9.85)	42.82 (9.56)
Suriname	41.67 (10.33)	42.12 (10.05)	43.62 (10.37)	44.18 (9.94)	44.94 (8.82)	45.68 (9.07)	44.35 (10.22)
Antilles	38.68 (10.46)	40.88 (9.69)	40.31 (10.54)	40.08 (10.04)	40.54 (10.13)	40.67 (10.17)	41.93 (11.51)
Indigenous-low ^a	48.73 (9.74)	48.09 (9.52)	47.99 (9.75)	47.57 (9.87)	47.26 (9.73)	47.49 (9.56)	47.12 (9.61)
Indigenous-high ^b	52.44 (8.55)	53.40 (8.24)	52.80 (8.46)	52.84 (8.59)	52.92 (8.61)	52.58 (8.96)	52.48 (9.00)
Arithmetic							
Turkey	40.75 (9.77)	42.76 (10.23)	44.67 (11.12)	45.07 (10.04)	46.02 (10.40)	45.69 (10.42)	46.12 (10.23)
Morocco	39.64 (10.07)	42.55 (9.70)	43.19 (10.80)	44.10 (10.07)	44.56 (10.61)	44.70 (10.19)	45.73 (10.19)
Suriname	42.03 (9.63)	42.63 (10.20)	44.10 (10.27)	44.63 (10.41)	45.78 (10.57)	44.05 (10.78)	45.43 (10.52)
Antilles	40.82 (8.78)	41.54 (9.15)	39.20 (10.14)	42.34 (9.55)	41.55 (10.63)	42.17 (11.02)	41.52 (10.91)
Indigenous-low ^a	48.30 (9.85)	47.66 (9.90)	47.57 (10.00)	47.05 (10.35)	46.78 (10.41)	46.62 (10.16)	46.31 (10.07)
Indigenous-high ^b	52.29 (9.51)	52.83 (9.09)	52.37 (8.98)	52.25 (9.05)	52.17 (9.01)	51.89 (9.20)	51.82 (9.36)

Test scores have been standardised for each year ($M=50$, $SD=10$)^a Both parents have completed at most junior secondary vocational education (disadvantaged indigenous pupils)^b One parent has completed at least junior general secondary education (non-disadvantaged indigenous pupils)

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