



# The educational consequences of language proficiency for young children



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## ABSTRACT

Our paper studies the educational consequences of language proficiency by investigating the relationship between dialect-speaking and academic performance of 5–6 year old children in the Netherlands. We find that dialect-speaking has a modestly negative effect on boys' language test scores. In addition, we study whether there are spillover effects of peers' dialect-speaking on test scores. We find no evidence for spillover effect of peers' dialect-speaking. The test scores of neither Dutch-speaking children nor dialect-speaking children are affected by the share of dialect-speaking peers in the classroom.

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## 1. Introduction

The economic consequences of language proficiency have received increasing attention in recent years. Language skills are viewed as part of human capital and play an important role in labor market performance, schooling, health care, consumption and investment (see an overview in Chiswick & Miller, 2014). The existing literature predominantly studies the topic in the context of immigration. These studies focus on how the proficiency in local languages contributes to adult immigrants' labor mar-

ket performance and social integration in host countries (Bleakley & Chin, 2004; 2010; Chiswick & Miller, 1995; Dustmann & Fabbri, 2003; Dustmann & van Soest, 2001; Yao & van Ours, 2015). Other papers investigate the educational performance of immigrant children (Dustmann, Machin, & Schonberg, 2010; Geay, McNally, & Telhaj, 2013).

Our paper contributes to the literature on the educational consequences of language skills but instead of studying immigrant students, it investigates the effects of speaking dialects at home on standardized test scores. We refer to variations of the standard language across regions and regional languages in a country as dialects. Since immigrants speak different languages from natives, they are the obvious choice for studying the effects of language. However, immigrant students do not only differ from native students in terms of the spoken language but they also

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have different socio-economic and cultural backgrounds. As a result, the estimated effects in previous papers are likely to reflect the combined influences of linguistic as well as cultural differences. In contrast, dialect-speaking students share a relatively homogeneous background with those who speak the standard language of the country. In this sense, our estimates are likely to capture purer language effects.

To our knowledge, our paper is the first to study the effects of speaking dialects on academic performance. Aside from the advantage of investigating the impacts of language proficiency exploiting dialect-speaking behavior, studying the economic consequences of dialect is important on its own. Dialects are an integral part of daily communication and widespread in many countries. Nonetheless, the existing economic literature on dialect is scarce. Grogger (2011, 2014) reports that non-standard speech patterns like African American and Southern American dialects are associated with lower wages in the US labor market. Similarly, Gao and Smyth (2011) find a significant wage premium associated with fluency in standard Mandarin for dialect-speaking migrating workers in China. These papers present evidence on labor market performance; a natural extension to the literature is to study how dialect-speaking affects students' academic performance.

Besides labor market performance at adulthood, the return to language skills can be traced back to the accumulation of human capital at early stages of life. A few recent studies investigate how skills in local languages are related to academic performance of immigrant students although the evidence is still limited. Using the UK National Pupil Database and the Millennium Cohort Study, Dustmann et al. (2010) find that immigrant students in the UK lag behind native students at the beginning of primary school. This gap is smaller for students whose mother tongue is English. Moreover, the gap diminishes throughout the primary and secondary schooling process and this is particularly prominent again among immigrants whose mother tongue is English. Their data, however, do not have information on parental education and therefore they cannot rule out the possibility that those who already speak English fluently come from highly educated families. Geay et al. (2013), on the other hand, study whether non-English speaking students affect native students' academic performance. They also use the National Pupil Database and present findings that non-English speaking immigrants often sort themselves into schools with more academically disadvantaged native students. Once they control for self-selection into schools, they report that there is no negative spillover effect from immigrants to native students.

As a case study, we choose the Netherlands to investigate the effects of dialect-speaking on education. There are three main reasons for our choice of country. Firstly, there exist multiple regional dialects in the Netherlands with varying degrees of linguistic distance to Standard Dutch. This variation allows us to study effectively the impact of language. Secondly, compared with other countries, native residents in the Netherlands are relatively more homogeneous in terms of ethnicity, culture, and even economic wealth. As a result, we are more likely to be able to pick

out the effect of language without the influences of other socio-economic and demographic characteristics. Thirdly, despite the existence of various dialects in the Netherlands, Standard Dutch is predominantly used in school teaching, even in regions where the position of the local dialect is strong (see Cheshire, Edwards, Munstermann, and Weltens, 1989 for an overview). In such a learning environment, dialect-speaking may pose negative effects on academic performance, especially on children's linguistic development. Furthermore, it may be more costly for these dialect-speaking children to interact with Standard Dutch speakers and teachers.

Our data from the PRIMA survey for Dutch primary schools provide us with a unique set of information collected from 5 to 6 year-old primary school children, their parents, as well as the school directors. In particular, the data include crucial information identifying those students who speak dialects at home. In addition, we also observe their test scores and classroom and school level characteristics.

In order to identify the effects of dialect-speaking on test scores, we estimate a linear function with individual and classroom variables. In addition, we control for school fixed effects to take account of potentially endogenous selection of students into schools. We separately estimate the dialect effects on language and math test scores. This is because linguistic disadvantages faced by dialect-speaking students may affect language scores more and we may, as a result, find heterogeneous effects across subjects. Indeed, we only find a negative impact of dialect-speaking on language test scores. In addition, dialect-speaking boys suffer more from learning in a language that is different from their daily language at home. Our point estimates may be affected by omitted variables such as the ability of some dialect-speaking students to adopt Standard Dutch faster. Such an ability is likely to affect not only the rate of learning Standard Dutch, but also the student's academic performance. Therefore, we conduct a sensitivity analysis by including math test scores in our regression as a measure of individual ability. Our results are robust to this alternative specification.

The fact that dialect-speaking students, who suffer academically, share the learning environment with those who speak Standard Dutch raises a further question: would classmates' speaking patterns affect academic performance? Although spillover effects in the classroom have gained much attention among social scientists in the last decade, we are the first to explicitly focus on speaking patterns. Spillover effects in the dialect-speaking setting can occur through several channels. First, there could be a negative spillover from dialect speakers to other students. Students may learn non-standard pronunciation and/or grammar from dialect speakers. The negative effects may be more evident in language skills than in other subjects if this were the case. Second, although the use of Standard Dutch is encouraged by teachers and used by the majority of students in Dutch primary schools, informal verbal interaction in dialects can occur between dialect speakers, thus segregating students into a dialect-speaking group and a Dutch-speaking group. Insufficient in-class interaction may harm the academic performance of all students

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