

Minority Language Proficiency of Adolescent Immigrant Children in England, Germany, the Netherlands, and Sweden

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Abstract We study minority language proficiency of adolescent immigrant children in England, Germany, the Netherlands and Sweden. We elaborate on theoretical mechanisms of exposure, efficiency and non-economic incentives of minority language acquisition. Using data from adolescent immigrant children in England, Germany, the Netherlands and Sweden, we find evidence for the role of exposure in that immigrant children who were born abroad were more proficient than those born in the host country. Exposure via the percentage of co-ethnics at school is positively related to minority proficiency, whereas parental proficiency in the destination language is negatively associated. Also belonging to a larger immigrant group increases exposure to the minority language and results in language retention. Efficiency in terms of cognitive abilities does not play a role. Non-economic incentives to retain the minority language, indicated by the ethnic identification of parents, is positively related to the child's minority language proficiency and this relationship is stronger when the quality of the parent-child relationship is higher.

Keywords Ethnic minorities · Immigration · Language proficiency · Mother tongue

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Herkunfts-Sprachkompetenz von jugendlichen Immigranten in England, Deutschland, den Niederlanden und Schweden

Zusammenfassung Wir untersuchen die Minoritäts- (Herkunfts-) Sprachkompetenz von jugendlichen Immigranten in England, Deutschland, den Niederlanden und Schweden. Wir spezifizieren theoretische Mechanismen wie Ausgesetztsein (exposure), Wirksamkeit und nicht-ökonomische Anreize auf das Erlernen der Sprache von Minoritäten. Wir verwenden Daten von jugendlichen Immigranten in den vier Ländern. Die Ergebnisse sind, dass Kinder von Immigranten, die nicht im Gastland geboren wurden, kompetenter in der Herkunftssprache waren als solche, die im Gastland geboren wurden. Die Sprachkompetenz stieg mit dem Anteil eigenethnischer Jugendlicher in der Schule, war aber geringer, wenn die Eltern die Sprache des Gastlandes beherrschen. Weiter zeigte sich, dass die Zugehörigkeit zu einer großen Gruppe von Immigranten dazu führt, der Sprache der Minorität stärker ausgesetzt zu sein, was dann dazu führte, die Herkunftssprache beizubehalten. Hingegen sind kognitive Fähigkeiten nicht bedeutsam für das Ausmaß der Kompetenz. Nicht-ökonomische Anreize, die Sprache der Minorität beizubehalten, z. B. durch das Ausmaß der ethnischen Identifikation der Eltern, weisen einen positiven Zusammenhang mit der Herkunfts-Sprachkompetenz der Kinder auf, und diese Beziehung ist stärker, wenn die Eltern-Kind-Bindung höher ist.

Schlüsselwörter Ethnische Minoritäten · Immigration · Sprachkompetenz · Muttersprache

1 Introduction

Immigration is a worldwide phenomenon that changes the ethnic composition of nations and raises questions about the incorporation of immigrants (Castles and Miller 2003). One important aspect of integration concerns the language use and proficiency of immigrants (Alba and Nee 2003; Chiswick and Miller 2001; Tran 2010). Whereas first generation immigrants are generally fluent in the minority language or ‘mother tongue’, many immigrants have difficulties in learning to speak and write the host country language. A considerable number of studies investigated patterns and causes of destination language use and proficiency of adult first-generation immigrants, i.e. immigrants who were born outside the destination country (e.g. Akresh 2007; Chiswick and Miller 2001; Espenshade and Fu 1997; Van Tubergen and Wierenga 2011; Veltman 1983).

For the children of immigrants, who grow up in the host country and learn the destination language at school, maintaining the minority language is additional to learning the destination language. Studies conducted in the United States show that quite some immigrant children do not speak and write their minority language well (e.g. Arriagada 2005; Rumbaut et al. 2006), which makes it an interesting topic for research. What explains individual differences in minority language skills? This question has become even more relevant nowadays, as the population of children of immigrants in traditional immigrant countries like the United States and in Europe is

rapidly growing (Stoeldraijer and Garssen 2011). Furthermore, research findings suggest that maintaining the minority language in addition to the destination language (“bilingualism”) has benefits for immigrant children over the use of only the destination language (e.g. Alba et al. 2002). For example, bilingual children were found to have higher educational outcomes (Portes and Rumbaut 1996). The minority language is also important because it is part of the ethnic identity (Phinney et al. 2001).

The few studies that have been done on minority language found that over generations, immigrants lose their mother tongue in favour of the destination language (Arriagada 2005; Rumbaut et al. 2006). The size of the immigrant group was found to have a protective effect, leading to more frequent use of minority language and higher proficiency (Linton 2004; Linton and Jiménez 2009; Lutz 2006; Stevens 1992). Family cohesion, as indicated by having non-divorced parents, positively influences language maintenance (Arriagada 2005; Lutz 2006; Tannenbaum and Berkovich 2005). Mixed results were found for residential segregation (Linton 2004; Vervoort et al. 2012), parental involvement (Tannenbaum and Berkovich 2005), and gender (Lutz 2006; Portes and Schauffler 1994).

The first aim of this study is to provide a coherent theory of minority language proficiency, in which mechanisms and assumptions are clearly specified. Most studies in this field of research tend to be descriptive, and theoretical mechanisms are not spelled out, resulting in a ‘variable-oriented’ approach (e.g. Arriagada 2005; Lutz 2006; Tran 2010). Instead, our study is theory-driven. We come up with a coherent theory, and identify key individual-level mechanisms of the acquisition of the minority language among adolescents. These mechanisms are partly taken from the Chiswick-Miller (1995, 2001) theory of language learning, which has been developed and applied in the context of foreign-born adults who acquire the destination language (Esser 2006; Van Tubergen 2010; Van Tubergen and Wierenga 2011). We discuss expansions and restrictions of this theory, identifying which of the mechanisms can (not) be applied to *minority* language learning among *adolescents*. We extend this standard theory by proposing a new mechanism that might be particularly relevant when studying minority languages. We then come up with assumptions about the connection between social contexts and the individual-level (behavioural) mechanisms, and formulate testable hypotheses.

The current study also contributes to the state of the art by examining minority language skills of adolescent immigrant children in Europe. Previous studies were mainly conducted in the United States (e.g. Arriagada 2005; Lutz 2006; Rumbaut et al. 2006; Tran 2010), and most of these studies examined Mexicans and other Spanish-speaking immigrant groups, which together make up a substantial language minority. In contrast to this large population of Spanish speaking immigrants in the United States, the language situation in European nations is more diverse. Many European countries host a variety of immigrant groups, many of them having a different language. Possibly, this might result in a fast loss of minority languages in Europe, but to date little is known about the proficiency in minority languages among immigrant children. We are not aware of any large-scale, comparative research on minority language proficiency of adolescent immigrant children in Europe.

We make use of the “Children of Immigrants Longitudinal Survey in four European countries” (CILS4EU; Kalter et al. 2013). An advantage of this dataset is that

it contains information provided by both children and parents. By using information provided by parents it is better possible to study the effects of parental characteristics than has been done in previous studies, which had to rely on information of the children. CILS4EU is a school-based survey that contains more than 6,000 immigrant children around 14–15 years of age, spread over almost 100 schools per country.

2 Theoretical background

To explain the minority language proficiency of adolescent children of immigrants we partly rely on Chiswick and Miller's influential theory of adult destination-language acquisition (Chiswick and Miller 1995, 2001). Chiswick and Miller (1995, 2001), and later on also Esser (2006) and Van Tubergen (2010) distinguish three theoretic mechanisms that are important for language learning, namely *exposure*, *efficiency* and *economic incentives*. These are individual-level behavioural mechanisms, which, in combination with bridge assumptions about macro-micro linkages, allow one to study the importance of social contexts.

In our study, we theoretically elaborate on the notions of exposure and efficiency, below. Economic incentives of language investments are relevant when studying adults, as they are participating in the labour market. Since our study involves immigrant children from around 14–15 years of age, we do not consider *economic* incentives to be relevant. In addition to the Chiswick-Miller theory, however, we do come up with a rather underdeveloped mechanism about *non-economic* incentives and motivations for language learning, which has to do with ethnic identification.

2.1 Exposure

The first mechanism identified by the Chiswick-Miller theory is *exposure*. It is defined as “the extent to which others, whether in person or through the media, use the destination language in one's presence and the extent to which the person himself or herself utilizes it” (Chiswick and Miller 1995, p. 249). In this original framing, Chiswick and Miller relate exposure to the destination language, i.e. the official language of the host society. The exposure mechanism has frequently been used in this context, and it is generally regarded as a major determinant of destination language proficiency of adult immigrants (e.g. Hwang and Xi 2008; Stevens 1992; Van Tubergen and Kalmijn 2009). Exposure to the destination language prior to migration, in the origin country, and after migration positively affect destination language skills (Chiswick and Miller 1995, 2001). Exposure to language can occur via media, but also in interaction with family members, friends, colleagues, neighbours, and so forth.

We use this mechanism to derive hypotheses about the acquisition of *minority* languages among *adolescents*. Consequently, we expect that when adolescents are more exposed to the minority language, they will be more proficient in this language. To do so, we need to relate this individual-level mechanism with auxiliary assumptions that link social contexts to the degree of individual exposure to the minority language. For immigrant adolescents, the degree of exposure to their minority language might be critically dependent on how often they hear and speak that language in the social

contexts in which they participate. We study the potential role of exposure in four (exogenously determined) social contexts in which adolescents are embedded: their *immigrant group*, their *school setting*, their *family*, and the *country of birth* in which they were born.

First, immigrant groups strongly differ in size. There are numerous smaller groups, and the language experience of growing up in such a smaller group might be dramatically different than when adolescents belong to a numerically large group. Larger immigrant groups provide a language environment in which immigrant children are frequently exposed to their minority language. In larger groups, immigrant children have more opportunities to meet co-ethnics, resulting in more co-ethnic contacts and higher levels of active and passive exposure to their mother tongue (Linton 2004; Linton and Jiménez 2009; Stevens 1992). Furthermore, the size of the immigrant group may also be related to the provision of media in the minority language. A higher supply and demand of media in the minority language is more likely with larger immigrant groups (Chiswick and Miller 2001). For these reasons, we hypothesize that *the higher the percentage of co-ethnics in the country of destination, the higher the minority language proficiency of adolescent immigrant children* (Hypothesis 1).

Another, more local context, that might affect exposure is the school. Exposure to the minority language can be determined by the ethnic composition of the school that immigrant children attend. Some schools mainly consist of minority youth, often even from the same background, whereas other schools predominantly consist of majority children. It can be assumed that a higher presence of co-ethnic students increases the exposure to the minority language, subsequently affecting the maintenance and proficiency in the minority language. The more immigrants from the same ethnic group are present at school the more opportunities immigrant children have to interact in their language and are exposed to the minority language use of other immigrant children. We therefore hypothesize: *The higher the percentage co-ethnics at school, the higher the minority language proficiency of immigrant children* (Hypothesis 2).

The family is probably the most important language environment (Ishizawa 2004). Immigrant children learn the minority language predominantly from their parents (Lutz 2006). Here, we study the possible consequences when parents are proficient in the destination language—which might change the language used when communicating with their children. We assume that children's exposure to the minority language at home will be less intense when the parents are more skilled in the destination language. When parents are not well proficient in the host language, they will tend to communicate in the minority language with their children. It is therefore hypothesized that *the more proficient parents are in the destination language, the lower the minority language proficiency of their children* (Hypothesis 3).

Finally, we study the socialization context and earlier exposure to minority language. As said, the adolescents we study here are around 14–15 years of age. Some of them were born abroad, whereas others were born and raised in the destination country. This can have important consequences for the exposure to the minority language when they were younger. Immigrant children who are born abroad (i.e., so-called first generation) have been solely exposed to the minority language for a number of years

before they migrated. Other adolescent immigrant children were born in the destination country (i.e., second generation) and they have been immediately exposed to both the minority and destination language. We expect to see consequences of this differential exposure for their command of the minority language. We therefore hypothesize: *First-generation immigrant children are more proficient in the minority language than second-generation immigrant children* (Hypothesis 4).

2.2 Efficiency

The theory of Chiswick and Miller (1995, 2001) also proposed an efficiency mechanism to explain individual differences in destination language proficiency of adult immigrants (cf. Esser 2006; Van Tubergen 2010; Van Tubergen and Kalmijn 2009). Efficiency is defined as “the extent of improvement in destination-language skills per unit of exposure” (Chiswick and Miller 1995, p. 394). This implies that adult immigrants who are more efficient in learning new languages will become more proficient in the host-country language. This individual-level learning mechanism has often been tested by considering the educational level of immigrants. In their work, Chiswick and Miller (2001) mainly focused on schooling as a proxy for the efficiency with which people learn new languages. Higher levels of schooling may indicate a greater ability to learn, which might carry over to the ability to learn languages.

Although this efficiency mechanism has been exclusively applied to adult immigrants who learn the host-country language, we argue that the scope of the mechanism might actually be larger and equally applied to research on minority language proficiency of adolescents. We assume that higher efficiency in language learning also entails higher efficiency in acquiring minority languages. We use the cognitive abilities of adolescents as a proxy for their efficiency in learning, and expect to see that this has a positive effect on the proficiency in the minority language. We hypothesize that *the higher the cognitive abilities, the higher the minority language proficiency of immigrant children* (Hypothesis 5).

2.3 Non-economic incentives

Chiswick and Miller’s theory (1995, 2001) focuses on economic incentives as the third mechanism of acquiring the host-country language of adult immigrants (cf. Esser 2006; Van Tubergen 2010). This mechanism states that language learning is on the one hand costly, as it involves opportunity costs (i.e., forgone earnings while not working), but also direct costs in terms of course fees or books needed for language learning. On the other hand, the mechanism states that learning the new language is economically beneficial for adult immigrants, given the human capital value of language abilities, and the increasing opportunities in the labour market. Such as an explicit calculation of the economic costs and labour market benefits seems less relevant when studying adolescents, who are still far away from participating in the labour market.

This is not to say that there are no incentives for adolescents to acquire the minority language, and that all that matters is learning via (passive) exposure and individual differences in efficiency. We propose that non-economic incentives might be

relevant for understanding investments in the minority language. A prime motivation for adolescents to acquire the minority language could be that such skills and knowledge promotes their ethnic group-belongingness. When adolescents learn the language of their minority group, they become part of their ethnic group, and learn about its culture, norms, values and traditions (Cheng and Kuo 2000; Ishizawa 2004). How important the motivations for adolescents are to acquire such knowledge about the ethnic and cultural tradition might in turn be dependent on how strongly the ethnic identity is emphasized by their parents. When parents strongly identify with their ethnic origin group, and put much effort in transmitting the cultural, ethnic and religious norms and values of their group, this presumably increases the non-economic incentives of adolescents to acquire the minority language of their parents. Importantly, parents differ in how strongly they identify with their ethnic group, and consequently how much they socialize their children in the ethnic traditions. It can be expected that parents who stronger identify with their ethnic group perceive the minority language as more important and take a more active stance in transmitting their culture and language to their children, which would have a positive effect on the motivations for adolescents to acquire the minority language. We hypothesize: *parental ethnic identification will have a positive effect on the minority language proficiency of immigrant children* (Hypothesis 6).

The non-economic motivations for adolescents to acquire the minority language might be conditional upon the relationship with their parents. When parents strongly identify with their ethnic origin group, and have a strong incentive to transmit the ethnic-cultural traditions to their children, its success depends on the quality of the parent-child relationship. In case there is a good relationship, socialization should work rather well and their adolescent children will acquire the minority language. When instead the children do not have a good relationship with their parents, they might not learn the minority language, even when parents strongly identify with their ethnic group and want their children to learn their ethnic language. Therefore, it is hypothesized that: *the more parental involvement, the stronger the positive effect of parental ethnic identification on the minority language proficiency of immigrant children* (Hypothesis 7).

3 Data and methods

To test our hypotheses, we use the first wave of the Children of Immigrants Longitudinal Survey (CILS4EU). Data were collected among students around 14–15 years of age in England, Germany, the Netherlands and Sweden during the academic year 2010–2011. High efforts were undertaken to standardize sampling frames, sampling, questionnaires, survey methods and data cleaning (Kalter et al. 2013). Nevertheless, country differences appear in response rates of schools and parents. Because the response rates among parents were too low in England and Sweden, we leave these countries out in the analysis of the role of parents. In some countries, we can match the CILS4EU data to contextual data on group size, whereas in other countries we cannot. We carefully pay attention to these issues in our study, as we will discuss below.

In each country, children filled in written questionnaires in their class at school. Around 5,000 children and 100 schools participated in the survey in each country. Children received a questionnaire to be filled out by one (not pre-determined) parent. Schools were sampled on their percentage of immigrants at school, stratified in four categories: (1) 0–10%; (2) 10–30%; (3) 30–60%; and (4) 60–100%. Schools with a high number of immigrant children were oversampled, and the dataset thus contains a large number of immigrant children.

Only children that meet one of the following two conditions were selected for this study: (1) child is born abroad; or (2) at least one of the parents is born abroad, and thus only first and second generation immigrants were selected. We used the migration background of children to determine immigrant group size at the national level and school level. In some countries, the migration background of third generation immigrant children could not be specified. Therefore, our sample only contained first and second generation immigrant children. Finally, we excluded children whose migration background refers to a country in which the destination language is dominant, since for these children it is very likely that the minority language is equal to the destination language. This leaves us with 5,878 children in the four countries.

3.1 Dependent variables

So far, we captured proficiency in the minority language as a general concept. However, four aspects of language proficiency are often distinguished; speaking, understanding, writing and reading. In previous research on immigrant children, the effects of the determinants have never been compared over different aspects. Some authors studied listening abilities (Cheng and Kuo 2000), speaking abilities (Lutz 2006; Portes and Hao 1998), speaking and understanding (Vervoort et al. 2012), or a combined scale of the four aspects (Arriagada 2005; Tran 2010). Possibly, some determinants differently affect language dimensions. We therefore investigate whether the proposed factors hold across different dimensions.

Minority language proficiency—Children were asked whether another language than the host language is spoken at home. When another language was indicated, they were asked about their proficiency in this language, measured by four questions: How well do you think you can (1) speak; (2) understand; (3) read; (4) write this <second> language?; The answering categories, on a 5-point scale, range from (1) ‘not at all’ to (5) ‘excellently’. For children who did not report another language to be spoken at home, we assumed these children to not be proficient in their minority language and therefore we assigned the lowest value of (1) ‘not at all’ to these children.

We distinguished between two dimensions of proficiency: (1) oral dimension (speaking and understanding), and (2) written dimension (reading and writing). Speaking and understanding were found to correlate 0.88, and reading and writing 0.91. The correlations are higher within dimensions than between dimensions, with the other possible dimensions correlating below 0.72. This convinced us that the two dimensions are empirically an appropriate distinction. For both dimensions a scale has been created (Cronbach’s alpha respectively 0.94 and 0.95).

3.2 Independent variables

Group size—The size of the immigrant group in the country is based on the migration background of the child. Specifically, we rely on figures on the number of first and second generation immigrants (children and adults) in the host country, per immigrant group (Central Bureau of Statistics Netherlands 2011). Group size is divided by the total number of inhabitants in the country. This variable could only be studied for the Netherlands, because reliable data on group size are not available for the other three countries.

Presence co-ethnics at school—The presence of co-ethnics at school is measured as the proportion of students at school that are from the same national origin. The relative size of the immigrant groups is based on migration background, and was acquired by aggregating our own data. Although we do not have precise figures on the entire school, at least two classes per school participated in the survey, and these classes were randomly selected.

Parental proficiency in the destination language—Parental proficiency in the destination language was measured by four questions: How well do you think you can (1) speak; (2) understand; (3) read; (4) write <host language>? The answering categories are on a 5-point scale ranging from (1) ‘not at all’ to (5) ‘excellently’. We use the same distinction as used for the child’s minority language proficiency also for their parents. In models to explain the oral proficiency of the child, the parent’s oral proficiency in the destination language is included. Likewise, when explaining the written proficiency of the child, the parent’s written proficiency in the destination language is included. Two separate scales are created (Cronbach’s alpha oral: 0.92; written: 0.91).

Generation—We distinguished between first and second generation immigrants, with the former being those children being born outside the host country, and the latter being those children being born in the host country (and having at least one parent born outside the host country).

Cognitive abilities—The abilities of children were tested during one school hour. We used the overall test score on puzzles made by the children during class, which indicates the number of puzzles answered correctly. These puzzles capture the abilities of children to reason and think logically and analytically.

Parental ethnic identification—The parent who filled out the questionnaire was asked whether he or she feels to belong to another group than the majority population. When another group was pointed out, it was asked how strongly the parent feels to belong to this group. The four answering categories range from (1) ‘very strongly’ to (4) ‘not at all strongly’. For parents who did not indicate to identify with another group than the majority group, we expected that they identify with the minority group even less than those who did report a minority group but identified ‘not at all strongly’. For these parents, we assigned a value of (5) that indicates less ethnic identification than (4) ‘not at all strongly’. The variable is reverse coded.

Relationship quality—To measure the quality of the relationship between parents and children, six statements are used: (1) My parents show interest in grades and achievement in school; (2) My parents tell me that they are proud when I do well at school; (3) My parents encourage me to work hard for school; (4) Whenever I feel

sad, my parents try to comfort me; (5) My parents try to understand what I think and feel; and (6) My parents show me that they love me. On all statements the answering categories range from (1) ‘strongly agree’ to (5) ‘strongly disagree’ on a five-point scale. Although the first three variables refer to involvement in school matters and the latter three statements are more general, the statements altogether load on one factor (i.e. all factors are above .56). The scale is found to be reliable, with a Cronbach’s alpha of 0.82. The scale is reverse coded with a higher value representing more parental involvement.

3.3 Control variables

Gender of child—We control for gender of the respondent. Previous studies showed that girls are more proficient in the minority language than boys (Lutz 2006; Portes and Hao 1998; Portes and Schauffler 1994; Tran 2010). A value of ‘1’ indicates that the child is a girl and ‘0’ indicates that the child is a boy.

Gender of parent—We have information on one of the parents and this is in most cases (i.e. 71%) the mother. To capture possible biases arising from gender differences in parents’ behaviour, we control for the gender of the parent.

Intermarriage—When parents are from different countries of origin, the transmittance of the minority language is argued to be lower than when both parents are from the same origin (Alba et al. 2002; Stevens 1985). Intermarriage was taken into account in combination with generation. As mentioned, we excluded all children whose migration background is ‘mixed’. For first generation immigrant children this means that the parents were born in the same country outside the host country and intermarriage could thus not be specified. For the second generation we distinguished two categories. The ‘secondmono’ category includes all second generation immigrant children whose parents are born in the same country outside the host country. The ‘secondmixed’ category indicates the second generation immigrant children who have one foreign-born and one native-born parent.

Intact families—Previous studies stated that living in an intact family is beneficial for the proficiency in the minority language (e.g. Arriagada 2005; Lutz 2006; Portes and Hao 1998). We included a dummy variable whether the child is living together with both biological parents.

Destination country—We included dummy variables for the destination countries.

Continent of origin—Children stem from different migration backgrounds and to control for differences between these backgrounds we included continent of origin. Due to the large number of different immigrant groups we could not control for them separately.

Table 1 provides the descriptive statistics of the dependent, independent and control variables.

3.4 Analytical method

We apply linear multilevel analyses to test our hypotheses. Individual observations are interdependent, because children are nested in school, their immigrant group and their host country. Standard statistical tests assume observations to be independent

Table 1 Descriptive statistics dependent, independent and control variables

Variable name	Mean/proportion	S.D.	Range
<i>Minority language proficiency</i>			
Oral	3.34	1.34	1–5
Written	2.54	1.34	1–5
<i>Percentage co-ethnics country</i>	1.34	1.01	0.0002–2.3353
<i>Percentage co-ethnics school</i>	12.35	14.93	0.7299–79.2453
<i>Parental proficiency destination language (L2)</i>			
Oral	3.48	0.91	1–5
Written	3.38	1.01	1–5
<i>Generation</i>			
First	0.25	0.43	0/1
Second mono	0.45	0.50	0/1
Second mixed	0.30	0.46	0/1
<i>Cognitive abilities</i>	17.65	4.56	0–27
<i>Parental ethnic identification</i>	3.19	1.68	1–5
<i>Relationship quality</i>	4.29	0.65	1–5
<i>Girl</i>	0.50	0.50	0/1
<i>Parent is mother</i>	0.72	0.45	0/1
<i>Intact family</i>	0.70	0.46	0/1
<i>Destination country</i>			
England	0.20	0.40	0/1
Germany	0.32	0.47	0/1
Netherlands	0.18	0.38	0/1
Sweden	0.30	0.46	0/1
<i>Continent of origin</i>			
Africa	0.17	0.37	0/1
Asia	0.46	0.50	0/1
Europe	0.30	0.46	0/1
North America	0.04	0.20	0/1
Oceania	0.004	0.06	0/1
South America	0.02	0.15	0/1

and by using these standard tests spurious results might occur (Snijders and Bosker 2011). For this reason, multilevel analysis is needed.

On the first level we have children. Immigrant children are then nested within the combination of immigrant groups and schools. To indicate this second level, unique combinations were created for all immigrant groups at all schools. The third level concerns the immigrant groups at the country level. Unique combinations were created for all immigrant groups in all countries. For example, Turkish children in the Netherlands have a different code than Turkish children in Germany, and Turkish children in the Netherlands have a different code than Moroccan children in the Netherlands.

We estimated four models for both oral and written language skills. In the first model we included only the respondents in the Netherlands and for this model all hypotheses could be tested. For the second model we added Germany, but because group size is unknown in Germany, we excluded group size at the national level in this model. The third model included Germany and the Netherlands but did not

contain information on parental characteristics and group size at the country level. We exclude these variables in order to compare the results with the identical model 4. In this model 4, we included all four countries and included the same variables as in model 3. Note that due to high non-response on the parental survey in Sweden and England, we only estimate the effect of parental characteristics in the Netherlands and Germany (model 2).

3.5 Multiple imputation

To deal with missing data, we used multiple imputation, which is a simulation-based statistical technique, and the only way to correctly deal with missing data (see Stata manual 2011). An advantage of this method over listwise deletion is that it avoids issues of selectivity. In our data we see that those children whose parent did not fill out the questionnaire have higher minority language proficiency than those children whose parent did fill out the questionnaire. This might hint at selectivity regarding parental characteristics. It can be expected that those parents not fluent in the destination language participated less often.

Multiple imputation is conducted with the chained function in Stata. All variables for our analyses are predicted by each other. Several other variables that are theoretically assumed to be associated with the imputed variables are also incorporated. A causal relationship is not necessarily assumed. To impute continuous and ordinal variables we used predictive mean matching (PMM). For categorical variables we used logistic regression (logit). 20 imputations were used to reduce the sampling error (reference manual of StataCorp 2011).

For the different models, we used different imputation files. The first files concerned imputations for Germany and the Netherlands and was used for models on the Netherlands and Germany. The second file concerned the imputation for all four countries together. This file did not include variables based on information provided by the parents, and was used for the fourth model. In both files, the imputation was done separately for the countries, because differences in associations might exist between countries.

4 Results

4.1 Descriptive patterns

We first discuss some descriptive findings on proficiency in minority languages in England, Germany, the Netherlands and Sweden. Quite some immigrant children reported that they do not at all read (15%) and write (18%) the minority language (findings not presented here). Only about 1–2% of the immigrant children stated that they do not at all speak or understand the minority language. Second generation immigrants reported more often to not at all speak the minority language, on all four aspects.

In a study by Rumbaut et al. (2006) on the United States, the percentage of immigrants who speak the minority language very well is examined by immigrant genera-

Table 2 Mean on oral and written minority language proficiency for two largest immigrant groups per country (scale 1–5)

England	Germany		Netherlands		Sweden						
	Oral	Written	Oral	Written	Oral	Written					
Total	3.26	2.25	Total	3.40	2.69	Total	3.12	2.35	Total	3.46	2.68
Pakistan	3.65	2.10	Turkey	3.67	3.14	Turkey	3.67	3.21	Iraq	3.93	2.62
India	3.50	2.06	Russia	3.18	2.08	Morocco	3.51	2.21	Serbia	3.87	3.57

tion. To compare whether the trend in the United States resembles the trend in Europe we examined the percentage of immigrant children who speak the minority language very well for which we combined our categories ‘very well’ and ‘excellently’. We find that among the first generation 66% of the children speak the minority language ‘very well’. This percentage drops for the children classified as ‘secondmono’ to 51%. Among the secondmixed category, only 24% speak the minority language very well. Rumbaut et al. (2006) found a similar decline in speaking the minority language very well.

To provide some insight into the minority language proficiency of different immigrant groups in the four countries, Table 2 presents a description of the mean of the oral and written language scales for the total immigrant population, but also for the two largest immigrant groups. The lowest oral skills are found for Russians in Germany and the highest for Serbians in Sweden. Serbians in Sweden also have the highest written proficiency whereas the Indian immigrant group in England has the lowest. Based on this table, the only immigrant group that can be compared across destination countries are Turks in Germany in the Netherlands. The table shows that their proficiency in the oral dimension in both countries is almost equal; however Turks in the Netherlands are somewhat better in reading and writing the minority language than Turks in Germany.

4.2 Multilevel analyses

We calculated the intraclass correlation based on the variance components in the intercept-only models (Table 3) and on the variance components presented in Tables 4 and 5. It shows that there is significant clustering at the combined groups-school level,

Table 3 Variance components in intercept only models

	Model 1—Netherlands	Model 2/Model 3 -Germany and Netherlands	Model 4—England, Germany, Netherlands, Sweden
<i>Oral dimension</i>			
Variance immigrant groups country	0.422	0.444	0.564
Variance immigrant groups school	0.180	0.122	0.189
Variance individuals	1.238	1.199	1.209
<i>Written dimension</i>			
Variance immigrant groups country	0.254	0.231	0.389
Variance immigrant groups school	0.028	0.069	0.128
Variance individuals	1.350	1.300	1.316

Table 4 Linear multilevel analysis: oral dimension of minority language proficiency

Oral dimension	Model 1 – Netherlands		Model 2 – Germany and Netherlands		Model 3 – Germany and Netherlands (incomplete)		Model 4 – England, Germany, Netherlands, Sweden	
	B	S.E.	B	S.E.	B	S.E.	B	S.E.
Intercept	3.444***	0.321	3.356***	0.180	2.819***	0.148	2.909***	0.124
% co-ethnics country	0.071	0.094						
% co-ethnics school	0.005*	0.004	0.005***	0.002	0.006***	0.002	0.006***	0.002
Parental proficiency oral L2	-0.043	0.056	-0.115***	0.029				
First generation	0.178*	0.109	0.322***	0.057	0.368***	0.057	0.418***	0.041
Second generation mono	0	0	0	0	0	0	0	0
Second generation mixed	-0.868***	0.113	-0.704***	0.058	-0.907***	0.055	-0.954***	0.040
Cognitive abilities	0.008	0.009	0.004	0.005	0.003	0.005	0.002	0.004
Parental ethnic identification	0.163***	0.031	0.147***	0.016				
Relationship quality	0.146**	0.067	0.198***	0.032	0.189***	0.032	0.167***	0.023
Parental ethnic identification * Relationship quality	0.056	0.046	0.007	0.022				
Girl	-0.165**	0.071	-0.015	0.040	0.009	0.040	0.049*	0.029
Gender parent (1 = mother)	-0.112	0.096	-0.107**	0.050				
Family structure (1 = intact family)	0.091	0.083	0.163***	0.048	0.232***	0.048	0.239***	0.034
Destination country								
England							0.215*	0.110
Germany			0.311***	0.087	0.313***	0.092	0.273**	0.107
Netherlands			0	0			0	0
Sweden							0.395***	0.103
Continent of origin								
Africa	-0.166	0.189	0.020	0.119	0.041	0.125	-0.026	0.098
Asia	-0.374**	0.180	0.031	0.106	0.054	0.113	-0.020	0.092
Europe	0	0	0	0	0	0	0	0
North America	-0.264	0.243	0.179	0.181	0.111	0.192	-0.122	0.159

Table 4 (Continued)

Oral dimension	Model 1 – Netherlands		Model 2 – Germany and Netherlands		Model 3 – Germany and Netherlands (incomplete)		Model 4 – England, Germany, Netherlands, Sweden	
	B	S.E.	B	S.E.	B	S.E.	B	S.E.
Oceania	0.038	0.420	-0.123	0.318	-0.171	0.332	0.050	0.302
South America	0.263	0.311	0.343*	0.200	0.341	0.210	0.302*	0.156
No. observations	1055		2948		2948		5878	
No. groups country	89		190		190		389	
No. groups school	558		1516		1516		3202	
Variance immigrant groups country	0.109		0.105		0.130		0.231	
Variance immigrant groups school	0.051		0.030		0.051		0.061	
Variance individuals	1.126		1.052		1.085		1.105	

Hypotheses tested one-sided; control variables tested two-sided

* $P < 0.1$; ** $P < 0.05$; *** $P < 0.01$

Table 5 Linear multilevel analysis: written dimension of minority language proficiency

Written dimension	Model 1 – Netherlands		Model 2 – Germany and Netherlands		Model 3 – Germany and Netherlands (incomplete)		Model 4 – England, Germany, Netherlands, Sweden	
	B	S.E.	B	S.E.	B	S.E.	B	S.E.
Intercept	2.583***	0.329	2.362***	0.188	2.085***	0.155	2.155***	0.126
% co-ethnics country	0.198**	0.098						
% co-ethnics school	0.005*	0.003	0.007***	0.002	0.008***	0.002	0.008***	0.002
Parental proficiency written L2	-0.008	0.055	-0.042*	0.027				
First generation	0.251**	0.112	0.458***	0.060	0.484***	0.060	0.625***	0.043
Second generation mono	0	0	0	0	0	0	0	0
Second generation mixed	-0.413***	0.119	-0.381***	0.062	-0.511***	0.057	-0.551***	0.042
Cognitive abilities	0.005	0.009	0.004	0.005	0.004	0.005	0.003	0.004
Parental ethnic identification	0.138***	0.035	0.113***	0.017				
Relationship quality	0.150**	0.070	0.215***	0.034	0.212***	0.034	0.173***	0.025
Parental ethnic identification * relationship quality	0.066*	0.048	0.032*	0.022				
Girl	-0.098	0.072	0.072*	0.042	0.089**	0.042	0.071**	0.031
Gender parent (1 = mother)	-0.233*	0.130	-0.120*	0.065				
Family situation (1 = intact family)	-0.028	0.085	0.124**	0.051	0.178***	0.050	0.193***	0.036
Destination country								
England							0.238**	0.109
Germany			0.247***	0.095	0.251**	0.098	0.221**	0.106
Netherlands			0	0			0	0
Sweden							0.434***	0.102
Continent of origin								
Africa	-0.339*	0.195	-0.244**	0.129	-0.230*	0.133	-0.332***	0.097
Asia	-0.687***	0.186	-0.461***	0.116	-0.451***	0.121	-0.465***	0.091
Europe	0	0	0	0	0	0	0	0
North America	-0.065	0.252	0.243	0.197	0.207	0.204	-0.017	0.158

Table 5 (Continued)

Written dimension	Model 1– Netherlands		Model 2– Germany and Netherlands		Model 3– Germany and Netherlands (incomplete)		Model 4– England, Germany, Netherlands, Sweden	
	B	S.E.	B	S.E.	B	S.E.	B	S.E.
Oceania	0.401	0.436	0.044	0.342	0.002	0.350	0.168	0.305
South America	0.507	0.321	0.502**	0.217	0.523**	0.222	0.397**	0.157
No. observations	1055		2948		2948		5878	
No. groups country	89		190		190		389	
No. groups school	558		1516		1516		3202	
Variance immigrant groups country	0.122		0.136		0.153		0.207	
Variance immigrant group school	0.000		0.027		0.030		0.075	
Variance individuals	1.234		1.175		1.207		1.205	

Hypotheses tested one-sided; control variables tested two-sided

* $P < 0.1$; ** $P < 0.05$; *** $P < 0.01$

and at the groups-country level, which means that both random components need to be taken into account.

The findings from the linear multilevel analyses are presented in Table 4 (oral skills) and 5 (written skills).

The first set of hypotheses was derived from the exposure mechanism. Our findings suggest that the size of the immigrant group in the host country positively affects written skills in the minority language (Table 5). We do not find a relationship between group size and oral skills (Table 4). Therefore, the support for hypothesis 1 is mixed. In line with hypothesis 2, the relative size of the co-ethnic immigrant group at school is positively related to the minority language proficiency. The higher the percentage of co-ethnics at school, the more proficient the child is in both the oral and written dimension of the minority language.

We find support for hypothesis 3, when we look at the results for both Germany and the Netherlands (Model 2). When studying only the Netherlands, results do not reach significance. But when analysed together with Germany, we clearly see that parents' proficiency in the host-country language is negatively associated with their children's written and oral minority language skills. We also observe differences across immigrant generation. As expected by hypothesis 4, we find the first generation to be less proficient in the minority language than the second generation.

Regarding the efficiency mechanism, we find no evidence for hypothesis 5. Cognitive abilities seem to have no effect on the minority language proficiency. The non-significant result is consistent across all models.

The third set of hypotheses reflected the non-economic incentives. The main effect of ethnic identification of the parents is positive and significant, indicating that the more parents identify with their ethnic group, the more proficient their children are in the minority language. We find this effect for both the oral and written dimension, and in both Model 1 (without Germany) and 2 (with Germany). This finding is in line with hypothesis 6. We also hypothesized about the interaction effect between parental ethnic identification and relationship quality. We expected the positive effect of parental ethnic identification to be stronger when parents have a better relationship with their children. We find this to be the case for the written dimension of language, but not for the oral dimension. Thus, the positive association between parental ethnic identification and written knowledge of the minority language is stronger when the parent-child relationship is stronger.

The control variables show some interesting patterns. Living with both biological parents is positively related to both oral and written language proficiency (Model 2–4). Furthermore, we find differences across our four destination countries. Children in Sweden are more proficient in the minority language than children in the Netherlands, with children in England and Germany being in between these two extremes.

5 Conclusion and discussion

We studied patterns and causes of minority language proficiency of adolescent immigrant children in Germany, Sweden, England and the Netherlands with data from CILS4EU. It is the first large-scale research on minority language skills in Europe.

Moreover, our study attempted to formulate a coherent theory of language learning, deviating from prior work which has been rather descriptive and variable-oriented. Theoretically, we formulated hypotheses from the mechanisms that emphasize the role of the degree of *exposure* to minority language (at home, at school, in other contexts), the *efficiency* with which children learn languages, and *non-economic motivations* (associated with the importance of the maintenance of ethnic traditions) and the resulting willingness to learn the mother tongue. The first two mechanisms were taken from the Chiswick-Miller theory, which has been developed and tested on foreign-born adults who acquire the destination language.

Three general conclusions can be drawn from our study.

First, virtually all immigrant children in the four European countries can speak their minority language and have at least some understanding of their mother tongue. Much more difficulties arise for adolescents when they have to read or write in their minority language. Learning to read and write typically requires more formal education and training, whereas speaking and understanding can be learnt more easily by practicing informally. For both oral and written dimensions, however, there are strong individual differences in skills.

Second, such individual differences in oral and written minority language skills partly arise because of differences in exposure to that language. Even when analysing children aged 14–15, we find that when they were born and socialized abroad, their command of the minority language is much better than when they were born in the host country. Such early exposure to the minority language apparently has an enduring effect on language maintenance. After arrival in the host country, another social context that affects the degree of exposure is their immigrant group. Some immigrant children belong to a relatively small group, which means they will be very little exposed to their minority language via daily social interactions in the neighbourhood, with friends and acquaintances, but also to a limited extent on social media. Indeed, we find that the language retention is stronger among children who grow up in numerically larger groups. On a more local level, we see that exposure works in schools as well. Schools can provide a protective social context for language maintenance, when there are many immigrant children who speak the same minority language. This provides ample opportunities to speak and hear their ethnic language on a daily basis. Also the social context at home matters. Naturally, parents are the prime source of exposure to the minority language, and it is obvious to assume a strong impact of parents. But in our study, we even showed that when parents have more knowledge of the host country language, their children have fewer oral and written command of the minority language. Presumably, when parents are more proficient in the host language, they use the minority language less often in communications with their children, resulting in fewer exposure and eventually a lack of minority proficiency among the children. All in all, these results confirm the testable hypotheses that were derived from the exposure mechanism.

Third, non-economic incentives play a role in acquiring the minority language, as learning this language is part of the ethnic-cultural tradition of the parents. When parents more strongly identify with their ethnic group, their children have more command of their parents' language, presumably due to the importance parents and their children attach to their cultural background. This parental transmission however is

conditional upon the quality of the parent-child relationship. When children have a good relationship with their parents, they will more strongly internalise the norms, values and traditions of their parents. Our study indeed shows that the positive effect of the ethnic identification of the parents on minority language proficiency is stronger when the parent-child relationship is qualitatively better.

The study can be improved in various ways, raising new questions and stimulating follow-up research. First, against expectations, we do not find evidence for the efficiency mechanism. We find that cognitive abilities are not related to minority language skills. Possibly, this means that the ability to think logically and analytically does not spill over to the ability to acquire new languages. Alternatively, there is such a linkage, but adolescents with higher cognitive abilities underestimate their minority skills, or use their talents for investments in the destination language at the cost of acquiring their mother tongue. As our study relied on only one measure, no strong conclusions about the role of efficiency can be drawn yet. Second, minority language proficiency was only measured for children who indicated another language to be spoken at home. Although that number was fairly high in our study (i.e., over 85%), little is known about the true minority language skills of the small group who report not to speak another language at home. Third, we used a self-rated proficiency in the minority language. Although so far most studies have employed measures of self-reported proficiency, it is more reliable to rely on actual tests of minority language skills. Fourth, results were not always the same for the oral and written dimension of language proficiency. In the theory used here, no differences were expected. Further research is encouraged to elaborate theoretically on differential effects on these two language dimensions. Finally, although our study included four different European countries, we did not formulate explicitly hypotheses on country differences, due to the low number of countries. Our exploratory comparative approach, however, showed that –after taking into account for various individual, family, and school characteristics– adolescent immigrant children in Sweden are more proficient in their minority language than in other countries, particularly the Netherlands. Further research is encouraged to explain such country differences.

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