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When your accent betrays you: the role of foreign accents in school-to-work transition of ethnic minority youth in Germany

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ABSTRACT

Given the challenges immigrants and their descendants face in entering the labour market, we add to the existing literature by considering a previously neglected explanation: a foreign accent. Using unique data with objective accent measures from the Children of Immigrants Longitudinal Survey in Four European Countries (CILS4EU), we first establish whether foreign-accent effects could be found in a non-experimental setting. Second, we seek to disentangle the accent effect by human capital, signalling, and discrimination approaches. Finally, we explore the extent to which employment and educational paths of accented speakers reflect their self-selection into the fields of study that lead to occupations for which accented speech is not a precondition. Our findings demonstrate that respondents with a stronger foreign accent are more likely to be found in occupations for which language skills are less essential. This is in line with the human-capital explanation. Self-selection tendencies might also be present, even though the findings are equivocal. Our analyses lend no support to the statistical discrimination explanation, as employers' perceptions of foreign accents do not vary according to the extent of their contact with accented speakers at work or at home.

Introduction

Research into school-to-work transitions has repeatedly pointed to the challenges immigrants and their descendants face when they enter the labour market (Heath, Rothon, and Kilpi 2008; Kalter and Kogan 2006). Inadequate educational qualifications, lack of vocational training, insufficient language proficiency, or deficiencies with regard to relevant social capital resources have been named as sources of immigrants' disadvantages (Kalter and Kogan 2006; Lindemann and Kogan 2013; Müller and Shavit 1998; Nielsen et al. 2003; Tasiran and Tezic 2007). In our study, we focus on another possible,

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but previously neglected, explanation: immigrants' foreign accents. An accent is generally understood as a unique mode of sound production in a spoken language that is influenced by a person's geographical origin, social status, or mother tongue (Edwards 1997; Lippi-Green 1997). Accents are related to fluency, which is defined as the extent to which someone has an expanded vocabulary, uses correct grammar and formulates syntactically correct sentences (Deprez-Sims and Morris 2013). Yet an accent is conceptually different from fluency. Individuals who speak with an accent may have sufficient or even high levels of proficiency in the standard form of the language at other linguistic levels (e.g. grammar, syntax, morphology or vocabulary) (Giles 1970).

So far, mainly socio-psychological research that assesses the role of accent in simulated employment interview experiments has shown that individuals with a perceived accent are given lower employability ratings (Carlson and McHenry 2006; Deprez-Sims and Morris 2013; for a review see Gluszek and Dovidio 2010), or they are regarded as suitable only for lower status jobs (Kalin and Rayko 1978) and are evaluated poorly on characteristics related to aptitude, intelligence, or competence (Cargile 2000; Ryan, Hewstone, and Giles 1984). Generalising from these results, non-native accents were suspected to be 'hidden sources of employment discrimination in much the same way as gender, age, or ethnicity' (Deprez-Sims and Morris 2013, 363).

However, due to the laboratory setting of this socio-psychological research strand – rather than the actual labour market application – this approach has at least three shortcomings. First, accent may be considered as a fundamental part of human capital and therefore as a productive resource for specific jobs. The topic of language skills as an aspect of human capital was especially addressed by economists who emphasised the pivotal role of general language proficiency in occupational success. However, while they have explored the role of language proficiency – almost exclusively measured subjectively – for labour-market success, and regularly measured it in terms of earnings (Chiswick 1991; Chiswick and Miller 2001; 2005; Shields and Price 2002; Yao and van Ours 2015; for a review see Chiswick and Miller 2015), they never touched upon the role of accent. Sociological research on this topic is almost non-existent as well. For notable exceptions, see Hwang, Xi, and Cao (2010) and Timming (2017), who follow the design commonly applied in socio-psychological studies.

Second, socio-psychological research neglects the fact that even if accented speech activates specific stereotypes about the assumed productivity of a person, employers are able to learn and revise the false assumptions they have about an applicant's foreign accent (Birkelund et al. 2020). Both concerns – productivity considerations and the focus on statistical discrimination – have been addressed in a recent field experiment by Schmaus and Kristen (2021), in which specially trained applicants – with and without accents – called companies that were offering job openings. By considering the perspective of the employers in a real labour market, this study overcomes important shortcomings of socio-psychological research, which is related to the lack of external validity.

A third shortcoming is common to both laboratory and field experiments: both leave out the actual employee perspective. The underrepresentation of individuals with a strong accent in some labour-market segments might also be due to the self-selection of applicants with a strong accent for certain jobs. Such self-selection could potentially

be the result of individuals deliberately avoiding positions where they would potentially be subject to discrimination. However, it is equally conceivable that applicants with a strong accent might think that their profiles are not suited for a specific job opening and therefore do not apply.

In the present study, we seek to inquire into the job-seekers' perspective and thus fill the void left by earlier research. Our analyses will draw on data from the Children of Immigrants Longitudinal Survey for Germany, especially on the sixth wave of data collection, which contains several unique features, including audio recordings of sample texts read by the survey respondents. This data allows the detection of individual accents for almost 2,000 young people aged 19–21 who either migrated themselves or whose parents or grandparents migrated. With this unique data on young people entering key life transitions from school to the labour market, to vocational training (VET), or to higher education, our study explores (1) the role of objectively measured accents (in contrast to subjective measures of language ability applied in most other research) in (2) actual labour-market outcomes which consider both employers and employees (in contrast to the rather hypothetical evaluations in socio-psychological experiments) for (3) a large representative sample of young people (4) in Germany – a country with a strong signalling power of characteristics, which are potentially relevant for productivity.

By factoring accent information into a model of labour-market entry, VET, or higher education – while also accounting for individuals' origin and relevant socio-demographic, migration-specific (e.g. age at migration, immigrant generation), human capital (e.g. educational qualifications, language proficiency, cognitive ability, grades), and social (e.g. parental occupation) resources – we will answer three questions: (1) Do we observe a foreign accent effect in non-experimental settings net of individual characteristics, including general language skills? (2) To what extent can the effect of a person's accent be explained by human capital theory as opposed to the signalling or discrimination approaches? (3) To what extent can the employment patterns of accented speakers reflect their self-selection into jobs for which accented speech is not considered a serious obstacle?

The article proceeds as follows. We will first lay down a theoretical framework highlighting why foreign accents may matter for individuals entering the labour market. We will thereby differentiate between the demand and the supply side, i.e. between the perspective of the employers and the potential employees. After presenting the theoretical considerations, we will introduce the data and the measures used in our analyses. Subsequently, we will present results from descriptive and multivariate analyses before ending with a discussion of our results.

The employment of immigrants and their descendants: why should foreign accents matter?

Why should foreign accents matter for employment decisions? Our theoretical considerations are based on three main strands of literature. We will start with the widely understood signalling approach, while also addressing several mechanisms discussed in socio-psychological research. Second, we will focus on human capital theory and evaluate under which conditions accents may be a productive labour-market resource, and how

they may be evaluated by employers. Finally, we will focus on the aspect of self-selection to address the possible choices employees with and without a foreign accent face.

Accents as triggers of signals

Following the socio-psychological research, foreign accents are assumed to trigger category-based judgements which will sort speakers into an in-group and an out-group (Deprez-Sims and Morris 2013). Whereas (perceived) members of the in-group are more likely to be evaluated higher on characteristics related to aptitude, intelligence, or competence (Cargile 2000; Fuertes et al. 2012; Giles and Powesland 1975; Ryan 1979; Ryan, Hewstone, and Giles 1984), speakers with a non-native accent are immediately identified as an out-group and are misjudged (see Dovidio and Gluszek 2012; Fuertes et al. 2012). Therefore, applicants who speak with a foreign accent may receive negative ratings during job interviews. Such ideas of differential attribution of characteristics to perceived out-groups have been proposed within Social Identity Theory and in the idea of intergroup biases (Sidanius and Pratto 1999; Tajfel et al. 1971).

In a similar vein, the concept of statistical discrimination assumes that when employers have limited information about an applicant, they will rely on group-level estimates based on the group the applicant is assumed to belong to (Aigner and Cain 1977; Phelps 1972). Given the strong link between age at migration or generational status, and the level of accented speech (Dollmann, Kogan, and Weißmann 2020), employers could use the degree of accented language as a proxy for an applicant's length of residence in the respective country, which also provides cues about where their educational career was accomplished. Besides the role of an accent as a 'biographical proxy', hearing accented speech might also prompt certain perceptions about the speakers' personality traits. For example, applicants with an immigrant background who speak without a foreign accent may be characterised as having a rather high level of motivation, as they have invested in their language skills and have managed to reach the level where they can speak practically without a foreign accent.

In immigrant-receiving societies, employers constantly encounter job seekers speaking with non-native accents. If employers hold certain statistical beliefs about the productivity of accented workers, statistical discrimination might occur. The general idea of statistical discrimination relies on the fact that employers initially have limited information about the productivity of applicants, and they therefore rely either on the applicants' assumed average productivity or on the variance in the group's productivity. However, employers' who have repeated contact with applicants who speak with a foreign accent, can reach a more precise estimate of the applicants' capability to fulfil the job requirements in a satisfactory way, and this may reduce the employers' biases in evaluation (Birkelund et al. 2020). We therefore expect that increased contact of employers with persons who have a foreign accent may improve the chances of respondents with a foreign accent of being hired.

Human capital theory

There is ample evidence that host-country language skills are an important aspect of human capital and help immigrants and their descendants enter the labour market

(Chiswick and Miller 1995; Dustmann 1994; Heath, Rothon, and Kilpi 2008). In most of the previous studies in this research strand, language proficiency was predominantly operationalised via subjective evaluated language skills but rarely via objectively measured language proficiency (e.g. Daley, Hu, and Warman 2019). Furthermore, research has often relied on a unidimensional indicator of language skills, such as, for example, a subjective assessment of their spoken host-country language. Some studies differentiate explicitly between separate dimensions of language proficiency – like speaking, reading, understanding, and writing in the language of the receiving society – thus highlighting the greater importance of one or another dimension (Lindemann and Kogan 2013). Further differentiations within each dimension are also meaningful. Native-like 'speaking' involves both correct grammar and correct vocabulary, whereas deficiencies in either dimension may hinder effective communication between different actors.

Another aspect of the speaking dimension – and one of the most salient (Derwing and Munro 2009) – is the presence of a specific foreign accent. There is some consensus that a central aspect of second-language proficiency is intelligibility (Derwing and Munro 1997), which can be defined as 'the apprehension of the message in the sense intended by the speaker' (Nelson 1982, 63, as cited in Derwing and Munro 1997, 2). Accent, however, is 'inextricably bound' to intelligibility. This means that speaking with a foreign accent may hinder effective communication in the workplace, as phonemes, words, or even complete sentences may be misunderstood (Van Wijngaarden 2001; Wang and van Heuven 2003). A listener may also need more time to process and to react to accented speech (Adank et al. 2009; Munro and Derwing 1995). These problems in intelligibility may be seen as a disadvantage in terms of productive resources or 'processing costs', and consequently they may lead to a higher probability of rejection of possible candidates speaking with a foreign accent (Adank et al. 2009; Schmaus and Kristen 2021).

However, there are reasons to assume that the negative consequences of an employee's human capital of speaking with a foreign accent are not uniform – they depend on the specific job characteristics. While some occupations require high language skills – particularly oral language skills – for instance because of direct customer contact or the necessity to communicate intensively within the company, others require less communication and therefore do not penalise employees who have poorer language skills or have a greater degree of a foreign accent. The findings of Hosoda and Stone-Romero (2010) support this assumption. They found that the highest impact of accented speech on hiring decisions was when linguistic skills were a requirement for the job. Following human capital theory, speaking without a foreign accent may be more rewarded in such occupations where the demand for oral language competencies is higher than in occupations where this demand is lower (see also Schmaus and Kristen 2021).

Self-selection

So far, we have discussed the mechanisms that employers use when selecting prospective employees, be it human capital indicators or average/biased assumptions. However, matching employees to jobs is a two-sided process a potential employee must first apply for a specific job before an employer can choose from available candidates when

a job opening is available (Logan 1996). This issue was mainly discussed with respect to the underrepresentation of women in specific jobs (Correll 2001; Fernandez-Mateo and Fernandez 2016), although it has also received some attention with respect to disparities between different ethnic and racial groups (Pager and Pedulla 2015).

One aspect of the self-selection process focuses on choice patterns as a reaction to anticipated discrimination. Employees with a foreign accent might not even apply for jobs where they face the risk of being rejected due to their (strongly) accented speech, particularly if these are jobs with high verbal requirements. However, as Pager and Pedulla (2015) note, although discrimination is pervasive, it may be hard to foresee in which occupations discrimination is particularly strong. This makes it difficult for a job seeker to effectively self-select in order to avoid discrimination. Instead, their findings suggest that a broad search strategy is most effective in increasing the chances of finding a job, albeit at a price of an increased risk of facing discrimination.

However, it is not only avoidance of discrimination that may shape immigrants' job-search behaviour, it is also the concrete preferences and the perceived match between individual skills and the actual skills profile of a position. Applicants may evaluate their own abilities and preferences and compare them to the specific job requirements. Thus, job seekers with a strong accent may try to avoid specific occupations where verbal skills are a necessary precondition. Consequently, the chosen behaviour of applicants may be guided in a way to reduce the risk of a skills mismatch. Furthermore, the self-assessment of their own language skills may be biased, and this could affect their decision to apply for specific jobs (Fernandez-Mateo and Fernandez 2016)

Data and methods

Sample

The following analyses are based on data from the German extension of the Children of Immigrants Longitudinal Survey in Four European Countries (CILS4EU-DE) (Kalter et al. 2016; Kalter, Kogan, and Dollmann 2019; 2021). The first three waves were conducted within an international research framework, including England, the Netherlands, and Sweden as the other participating countries. The initial sample was selected following a school-based probability sampling approach, with the sampling units being on three levels: schools, classes, and students. First, in the school year 2010/11, a sample of schools was selected from a list comprising all schools of a country enrolling the relevant target population, i.e. students being enrolled in a school class in which most of the students were already, or would turn, 14 during the school year. In order to achieve a sufficient number of students with an immigrant background in the final sample, schools with a higher proportion of immigrants were oversampled. Furthermore, implicit stratifiers were used to achieve proportionate samples over school types and regions. Within the selected schools, two classes were randomly selected, and within the selected classes, all students were asked to participate in the survey. This strategy resulted in the selection of 144 schools, 271 school classes, and 5,013 students in the first wave in Germany.

During the German extension, which followed the international project after wave three, a refreshment sample was drawn in wave six in 2016, after which data collection

was conducted on a biennial basis. The target population were respondents of the same birth cohort as the original sample. The aim was to achieve a net sample size after wave six of at least the same size as the sample after wave one, i.e. a minimum of 5000 cases. The sample was selected following a municipality-based sampling approach. In total, 62 municipalities were randomly selected with probabilities proportional to their size, thus further ensuring a proportionate sample of regions and community sizes. After contacting the respective statistical offices, name lists of the gross sample were delivered. Afterwards, all names were classified according to a possible migration background using name-based – so-called 'onomastic' – procedures (Humpert and Schneiderheinze 2016). The result of this classification was a list of respondents with a possible immigrant background. The samples were chosen from these lists, aiming to achieve a similar distribution of immigrants and non-immigrants as in the first wave (Schiel et al. 2016).

After wave six, four additional waves were conducted (waves seven, eight and nine, plus an additional COVID-19 wave) of which data up to wave eight is available up to date. For our analyses, we relied on data from wave eight to assess the structural outcome at ages 23–26. The participation rate in this wave was 79.6 per cent (n = 4;196 Soiné et al. 2021). Additionally, we relied on data from wave six (n = 5,820) during which the accent measures were conducted in personal face-to-face interviews.[1] More information on this issue can be found in the next section. In addition, we only considered respondents with an immigrant background (up to the 3.5th generation, cf. Dollmann, Jacob, and Kalter 2014), which number 2,728 individuals, of whom 1,772 consented to be recorded for their accent measure

Measures

Dependent variable

Our dependent variable of interest was the main activity of our respondents in wave eight – that is, around the ages 23–26. By this age, young people will have completed compulsory upper secondary education, followed by vocational training or tertiary education, and finally entered the labour market, although some may still be in tertiary education at this age. We decided to focus on the end of the school to work transition process as the relevant time point to measure our dependent variable, although other alternatives are possible, such as focusing only on the first job. However, as quite a few respondents in CILS4EU-DE still pursue tertiary education at wave eight, we decided to focus on the current status of adolescents at wave eight in which we also included tertiary students, as considering only the first job would have reduced our analytical sample further. *In a first step* of generating our dependent variable, we differentiated three statuses: working (including apprenticeship in dual vocational training: 'work/VET'), studies (including school-based vocational training), and any other status.[2] This trichotomous variable served as our first dependent variable.

Determining the importance of language for different occupations/fields of studies: the O*NET measure

In a second step, we differentiated occupations in 'work/VET' by how important language was for the performance on the job. For this, we relied on data from the O*NET occupational database (see Mumford et al. 2001).[3] O*NET is used both as a public

information source and for scientific research.[4] Among other characteristics, this database contains information about the importance of language skills and language abilities that are needed to execute almost 1,000 occupations in the US economy.[5] For this, job incumbents filled out questionnaires on various domains of their occupation. On the basis of this information, 16 trained occupational analysts rated the importance of the skills and abilities for the respective occupations. There were at least eight analysts per occupation.

We relied on ratings of the following skills, which we assumed that workers would need to master beyond simply conveying information and for which accented speech might be detrimental: persuasion ('persuading others to change their minds or behaviour'); negotiation ('bringing others together and trying to reconcile differences'); instruction ('teaching others how to do something'), and service orientation ('actively looking for ways to help people'). In addition, we included speech clarity ('the ability to speak clearly so others can understand you') as an ability measure. Job incumbents provided information on a five-point scale based on how important these were to the performance of their job: 1 = not important, 2 = somewhat important, 3 = important, 4 = very important, 5 = extremely important. On the basis of this information, the occupational analysts provided overall ratings for the occupation, which resulted in the final variables (see Donsbach et al. 2003 for a detailed description).

In a third step, we matched these variables to respondents working or in vocational training in wave 8 using information about their occupations in the CILS4EU-DE data. Since this information was coded according to the International Standard Classification of Occupations 2008 (ISCO-08), we used a crosswalk provided by Hardy, Keister, and Lewandowski (2018) to link the O*NET occupational classification to ISCO-08.[6] On the basis of these five variables, we calculated a dummy variable that was set to '1' ('language is important') if the analysts' final rating on at least four of these five variables was 3 or higher, and was set to '0' ('language is not important') for all remaining cases.

For students, however, distinguishing by occupation was not straightforward. To approximate students' future occupation, we used information from Starting Cohort 5 (SC5) of the German National Educational Panel Study (NEPS) (Blossfeld and Roßbach 2019; NEPS Network 2023).[7] In this starting cohort, first-year students enrolled in German universities for the first time were sampled in 2010 and interviewed in consecutive years after that, thereby capturing their higher education histories and their transition into the labour market. Information on education and labour-market histories was provided in episodic data sets. From these data, we calculated the importance values of the skills and abilities of students' first stable employment after having left university. We defined 'leaving university' as finishing university studies with a degree for the first time and not enrolling in further studies for the next 12 months. The 'first stable job' was defined as the first job that lasted for more than 12 months. By doing this, we aimed at excluding bridging jobs between two study phases or, before the labour-market entry phase, excluding short-term jobs that were not related to the field of study. As for the CILS4EU-DE sample, we enhanced this job information via the ISCO-08 code with the O*NET information on the importance of skill and ability. Finally, we averaged each of these five variables for nine different groups of study subjects (based on the DESTATIS classification which was also used in the CILS4EU-DE data) and six groups of immigrants in the data: Turkey, Southern Europe, former Yugoslavian

Republic, former Soviet Union/Central and Eastern Europe, Northern and Western Europe, and the remaining countries. We calculated mean values separately for teaching degrees and non-teaching degrees.

These mean values were then added to our CILS4EU-DE respondents on the basis of the corresponding information on subject group (in case of more than one main subject: of the first main subject mentioned), origin group, and type of degree (teaching versus non-teaching). Based on these assigned values as described above for respondents working or in vocational training, we differentiated between 'language is important' and 'language is not important' for occupations university graduates from different fields of study typically enter.

The resulting second dependent variable thus had five categories: work/VET ('language is not important'), work/VET ('language is important'), studies ('language is not important'), studies ('language is important'), and other types of activities.[8]

Foreign accents

As mentioned above, respondents' accents in the German language were measured during the personal interviews of the sixth wave of the survey (for the following description of the procedure, see Dollmann, Kogan, and Weißmann 2020). The instrument was developed with phoneticians from the University of Halle-Wittenberg and consists of two parts. In the first part, respondents were asked to read aloud a text that was especially designed to reveal accented pronunciation. In the second part, respondents were encouraged to engage in a more informal conversation by being asked how they felt during the interview, which parts of the survey they liked most, and which parts least. Both parts were recorded and subsequently evaluated and rated by research assistants who had a background in subjects with linguistic competencies and who had been extensively trained by phoneticians from the University of Halle-Wittenberg. One advantage of a rating using the audio recordings after the interview is that the recordings allow the raters to focus solely on the accent and not on visual cues, i.e. the participants' visual appearance (Timming 2017) prevents 'better' accent ratings for more attractive participants.

Consistent with previous studies, we used a nine-point scale to judge the strength of a foreign accent in reading and in extemporaneous speech (cf. Southwood and Flege 1999). In our analyses, we relied solely on the accent scores for reading as this is the most standardised part of the measurement. This has already been proved in other studies using the same data, but different topics (Dollmann, Kogan, and Weißmann 2020; Kogan, Dollmann, and Weißmann 2021).

General language and cognitive skills

In order to separate the effect of a foreign accent from language skills in general, we used another variable for capturing the richness of a respondent's vocabulary resulting from the verbal part of a cognitive ability test (KFT; Heller and Perleth 2000), which was conducted during the sixth wave of the survey. During this test, respondents were requested to select one synonym out of four possibilities for each of 25 words. The corresponding variable indicates the share of correct answers and thus ranged between 0 and 1. To measure general cognitive skills which are relevant at labour-market entry, we relied on a variable resulting from a language-free Culture Fair Intelligence Test, which

measures general (i.e. fluid) intelligence (CFT 20; Weiß 2006). In the same way as the verbal test, the variable ranges from 0 to 1 and indicates the proportion of correct answers.[9]

Ethnic origin

Regarding the ethnic origins of immigrants and their descendants, we distinguished between immigrants or children of immigrants arriving from (1) Turkey (reference category), (2) Southern Europe, (3) former Yugoslavian Republic (4) former Soviet Union and Eastern Europe, (5) Northern and Western Europe, and (6) other origins.[10] Furthermore, we controlled for adolescents' generational status. We distinguished between individuals who were born in Germany to immigrant parents, whose grandparents were immigrants, and those who were born abroad. Moreover, we included a dummy variable that indicates whether a respondent has the German citizenship. Additional demographic characteristics included in the analyses are gender and the respondents' year of birth (before 1995, 1995 [reference category], after 1995).

Level of education

Given that educational qualifications are one of the most important signals at the school-to-work transition, we also considered the respondents' level of education.[11] The highest levels of education were categorised as: lower secondary degree or no degree, intermediate secondary degree, upper secondary degree (reference category), and applied upper secondary degree. These categories reflect the structural division within the German secondary education system between *Hauptschule* (lower secondary), *Realschule* (intermediate secondary), and *Gymnasium* (upper secondary), existing both in a classic form, leading to the *Abitur*, and in a more applied form, leading to the vocational *Abitur*.

Parental education and socio-economic status of the family

In order to assess the endowment of resources within a family that might be helpful at labour-market entry – for instance, social networks, cultural capital, and economic resources – we controlled for families' socio-economic characteristics. These include the parents' highest level of education, differentiating between lower secondary, intermediate secondary, upper secondary, and tertiary levels of education (reference category). In addition, we included a dummy variable to capture parents without an educational degree. Parental occupational status is represented by the highest ISEI (International Socio-Economic Index of Occupational Status) score of both parents (Ganzeboom, De Graaf, and Treiman 1992).

Discrimination experience

To measure any previous encounters with discriminatory practices, we rely on information measured in wave six. Respondents were first asked whether they have ever applied for a job or for a vocational training or higher education position before. Those who did were asked whether they ever felt discriminated against because of their ethnic origin. This resulted in a trichotomous variable: Respondents without discrimination experiences, respondents with discrimination experiences, and those who

have never applied for a job, training, or higher education position before. For each category, we created a dummy and calculated interaction effects with the strength of foreign accent.

Contextual characteristics

In order to test the statistical discrimination argument of whether contact with applicants with a foreign accent might help employers to overcome their lack of information about the actual productivity of applicants, we used two contextual characteristics to indicate the prevalence of applicants likely to speak with a foreign accent in two contexts: the workplace and the living environment. Regarding the former, we calculated the proportion of people within the respondent's municipality with the same ethnic background as the respondent. This value ranged from 0 to 1. To obtain this information, respondents' addresses in wave six were geocoded and merged with data gathered by a geomarketing and micromarketing company ('Microm'). These data provided information on neighbourhoods with an average size of about 500 households (Microm 2017). For the current study, we used information on the ethnic composition of the municipality, based on name-based classifications of the members of each household within a specific neighbourhood (see Mateos 2007). Regarding the proportion of people in a specific job who were likely to speak with an accent, we calculated the proportion of first-generation immigrants in that occupation. In order to obtain this measure, we used several years of the German microcensus and matched the information of the workforce's ethnic origin in a specific occupation to the respective ISCO-08 codes.[12] For both contextual measures, we calculated interaction effects with the strength of foreign accent.

Missing data and analytical strategy

As with all surveys, we faced the problem of missing data due to item nonresponse or panel attrition. For instance, for our accent measure in wave six, we could rely on 1,764 observations with valid values, while our outcome variable measured in wave eight contained valid information for 1,426 observations. To retain as much information as possible for our analyses, we employed full information maximum likelihood (FIML) estimation methods using Stata's structural equation modelling capacities (sem; Stata/SE 18.0) which supports FIML estimations. We included observations that have valid information on either our accent measure in wave six or our outcome measure in wave eight (n = 2,241). Cases without information on both variables were excluded from the analyses (n = 487).

Due to the multinomial nature of our dependent variable, we first created five dummy variables that indicate experiencing the respective outcome in wave eight. We then estimated linear regression models on each of these five outcome variables using Stata's structural equation modelling command using FIML (i.e. treating missing values by specifying maximum likelihood estimation with missing values). We interpret the coefficients of our independent variables as percentage point changes in the likelihood of experiencing the respective outcome. The code of all analyses can be found at https://osf.io/6dthb/.
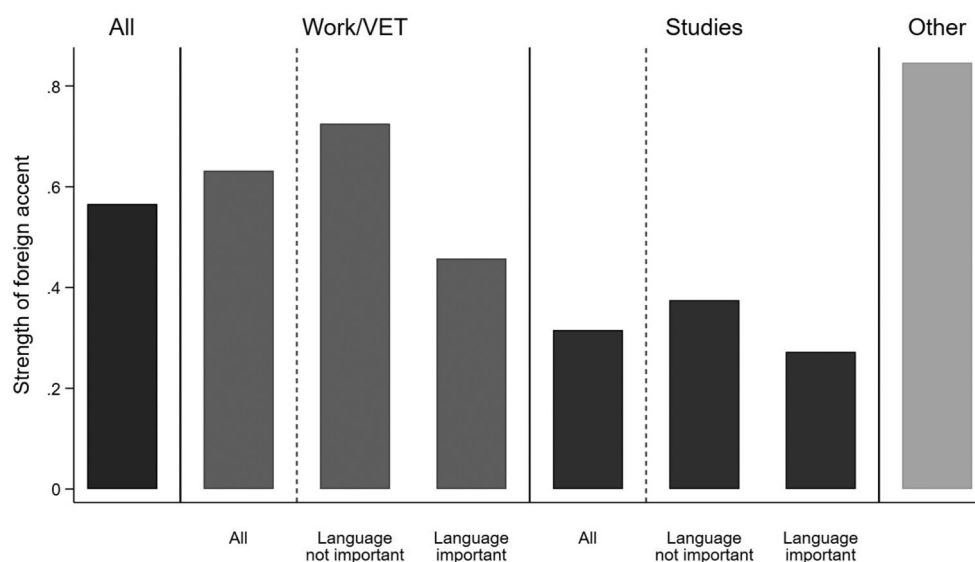
Figure 1. Strength of foreign accent by young people's current situation and the importance of language for a job.

Source: CILS4EU and CILS4EU-DE, O*NET, own calculations, results design-weighted.

Results

We start by presenting the distribution of the variable *strength of foreign accent* by the current situation of young people and the importance of language skills for a job. Figure 1 shows that respondents found in 'other activities' have the strongest foreign accent on average, followed by those in vocational education and training and those in the labour market. In contrast, being enrolled in tertiary education is associated with a much weaker foreign accent. Further descriptive results of the other variables, differentiated for different outcomes of the adolescents, together with a distribution of missing values over the variables used in the analyses can be found in the Appendix (Table A2).

Having established differences in the prevalence of foreign accents among young people in different activities we move on to the analytical part of the paper, in which we delve deeper into the explanations behind the importance of foreign accent for young people's VET and labour market integration. The first question we pursue is whether the effect of accent on entry into various activities (VET, labour market) persists once we control for individual characteristics related to both the prevalence of foreign accent and the success of school-to-work transitions. The second question pertains to the human capital explanation for the effect of accent, which we pursue by assessing the differential effects of accent on entry into language intensive and less language intensive occupations.[13] Thirdly, we ask ourselves whether there is self-selection on the basis of verbal language skills. We examine this through analyses of entry to tertiary education and particularly heterogeneous effects of accent depending on tertiary fields of study. Finally, we investigate whether foreign accents may lead to statistical discrimination on the part of employers. Our analyses

provide evidence for or against certain theoretical arguments without providing rigorous theoretical tests that would clearly distinguish between the human capital, self-selection and statistical discrimination explanations. We will return to this limitation in the discussion.

The effects of foreign accents on the type of main activity

In this section, we investigate whether individuals with a stronger foreign accent are found in different main activities, as opposed to those without a foreign accent. First, we focus on the question of whether and how accented speech is associated with the probability of being part of the labour market or the dual vocational education-and-training system, to pursue studies at a higher education institution or vocational training in full-time schooling, or to follow other activities. After that, we further differentiate between labour market sectors in which language plays an important role, or is even a prerequisite for getting a job, and those sectors where language is less essential. We also differentiate between fields of studies that are more likely to lead to an occupation for which language is particularly important, and those where this is not the case. We start the analyses with a general model (Model 1 (M1) in Table 1 [full models in Appendix Table A5]), which displays the gross effect of a foreign accent. As can be seen, speaking with a stronger accent is associated with a statistically significant lower probability of pursuing studies, and with (statistically not significant) higher propensities of being in vocational education and training or already being in the labour market ('work/VET') or undertaking activities other than work/VET and studies (statistically significant at the 10% level).

In Model 2 (M2), we additionally control for several socio-demographic measures such as ethnic background, generational status (or age at migration in the case of first-generation immigrants), German citizenship, parents' highest education and ISEI, gender, and year of birth. As can be seen, by considering these additional variables, the association between the strength of a foreign accent and the dependent variables is reduced, however, the lower probabilities of pursuing studies among individuals speaking with stronger non-native accents remain statistically significant. In Model 3 (M3) and Model 4 (M4), we consider individual preconditions for entering specific main activities, such as respondents' educational level (M3) and cognitive and

Table 1. The role of accent for young people's current situation (results from structural equation models applying FIML).

		Work/VET	Studies	Other
M1	Accent only	0.030	−0.057***	0.041[+]
		(0.019)	(0.010)	(0.022)
M2	M1 + ethnic background, immigrant generation, parental education and ISEI, citizenship, year of birth and gender	0.020	−0.037**	0.025
		(0.019)	(0.013)	(0.021)
M3	M2 + school leaving degree	0.007	−0.024*	0.022
		(0.021)	(0.011)	(0.020)
M4	M3 + cognitive skills and vocabulary test	−0.007	−0.017	0.028
		(0.022)	(0.012)	(0.020)

Source: CILS4EU and CILS4EU-DE wave 8, O*NET, own calculations, results design-weighted.
[+]$p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; observations: 2,241

language test score (M4). As can be seen, after considering these additional variables, the effect of the strength of foreign accent on being in higher education vanishes. Therefore, it does not seem as though speaking with a foreign accent is important for entering the labour market or for pursuing studies above and beyond other individual or family resources.

Are job requirements or individual self-selection behind the accent effect?

So far, our analyses have considered pronunciation as being equally important for fulfilling job demands in different sectors of the labour market. Obviously, bank clerks tend to face greater communication requirements in their daily operations with customers than workers on a production line. Therefore, we introduce a differentiation of labour-market sectors according to the importance of language requirements. With respect to the category work/VET as well as school-based training programmes, we rely on the O*NET classification for a respondent's main occupation or vocational training position, as outlined above. For those enrolled in tertiary education, we impute the occupation that most likely results out of this field of study, as described in the data and methods section above, and assign it a corresponding score within the O*NET classification. Whereas entry to the labour market and VET can be governed both by job-seekers' self-selection and by job-related language requirements, there is no formal oral test for entry to higher education in Germany. In the German-language tertiary-education programmes, anyone fulfilling the basic academic requirements is eligible for studies. Therefore, a lower propensity for pursuing studies in some fields could be attributed rather to individual self-selection away from communication-intensive and language-intensive occupations.

Table 2. The role of accent for young people's current situation depending on occupations' language intensity (results from structural equation models applying FIML).

		Language domains are important in:				
		Work/VET		Studies		
		No	Yes	No	Yes	Other
M1	Accent only	0.042*	−0.012	−0.018**	−0.038***	0.041[+]
		(0.021)	(0.013)	(0.006)	(0.008)	(0.022)
M2	M1 + ethnic background, immigrant generation,	0.043*	−0.026	−0.011	−0.024*	0.025
	parental education and ISEI, citizenship, year of birth and gender	(0.021)	(0.016)	(0.008)	(0.010)	(0.021)
M3	M2 + school leaving degree	0.034	−0.031[+]	−0.005	−0.018*	0.022
		(0.023)	(0.017)	(0.007)	(0.009)	(0.020)
M4	M3 + cognitive skills and vocabulary test	0.025	−0.035*	−0.006	−0.011	0.028
		(0.024)	(0.018)	(0.008)	(0.009)	(0.020)
M5	Accent	0.035	−0.044**	−0.006	−0.012	0.028
		(0.025)	(0.016)	(0.009)	(0.010)	(0.023)
	Discrimination experience	−0.058	0.052	−0.019	−0.062	0.091
		(0.100)	(0.087)	(0.040)	(0.047)	(0.070)
	x accent	−0.017	0.056	0.023	−0.012	−0.052
		(0.061)	(0.053)	(0.018)	(0.023)	(0.040)
	Never applied	0.109	−0.066	0.047	−0.029	−0.067
		(0.108)	(0.060)	(0.060)	(0.048)	(0.074)
	x accent	−0.093	−0.040	−0.032	0.060*	0.099
		(0.077)	(0.058)	(0.024)	(0.028)	(0.064)

Source: CILS4EU and CILS4EU-DE, O*NET, NEPS SC5, own calculations, results design-weighted.
[+]$p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; observations: 2,241

Table 2 presents the results of these more differentiated analyses (full models can be found in Appendix Table A6). Model 1 suggests higher probabilities of entering occupations with weaker or no language requirements for individuals speaking with stronger non-native accent. Further, for accented speakers, we notice the lower probabilities of pursuing tertiary education, and especially for fields of study which lead to occupations with higher verbal requirements. Naturally, the coefficient for 'Other' is the same as the one presented in Table 1.[14]

The effects of a foreign accent remain rather stable after controlling for the socio-demographic variables and for parental resources in Model 2, although the sizes of the effects are reduced especially when considering fields of studies where language requirements are important. So far, these results could indicate some sort of self-selection for the fields of studies leading to the occupations corresponding to an individual's level of language capital, as respondents with a stronger accent seem to shy away from studies with higher communication requirements. However, when we additionally include in our analyses individual resources related to the respondents' educational programme and cognitive skills, as well as language test scores (Model 3 and Model 4), the effect size for the variable pertaining to the strength of a foreign accent on the language-intensive fields of study is considerably reduced and no longer statistically significant.

Noteworthy are the patterns of job or VET entry. In the models, after accounting for the level of education, language proficiency, and cognitive skills required for entry into occupations where communication and language skills are paramount, the effect size of the accent variable becomes larger and statistically significant. At the same time, the effect for entry into occupations where communication and language skills are less important shrinks and loses statistical significance.

Our findings confirm the human capital explanation for the accent-effect on the labour market entry and provide more inconclusive evidence for the self-selection argument related to sorting into less-language intensive fields of study among young people with stronger foreign accents. The size of the effect is somewhat smaller and not statistically significant, in the models pertaining to tertiary education entry.

Before we turn our focus to the question of whether statistical discrimination on the employer's side might play a role when employing people with or without strong foreign accents for different positions, we investigate how employees' past experiences of discrimination might be important. To this end, we investigate whether the combination of past discrimination experiences and a strong foreign accent might lead to specific outcomes of our dependent variable. We therefore interact the accent variable with the variable that asks about whether the person perceived discrimination in previous job interviews (Model 5 (M5)). As can be seen, all but one interaction effect is statistically significant.[15] Nevertheless, some patterns can be observed. Counterintuitively, respondents with a stronger accent and with past experiences of discrimination in job interviews, are *more* likely to be found in occupations where language is *important*. However, with the data at hand, it is unclear whether this discrimination experience pertains to the position the employee currently holds, or whether it was encountered earlier. In contrast, respondents with a stronger accent who have experienced discrimination in the past are not only more likely to be found in the fields of studies with lower communication requirements, but are also more likely to avoid fields of study in which language is important. These

Table 3. The role of accent in language-intensive Work/VET (results from structural equation models applying FIML).

	M1	M2	M3	M4
Accent	−0.046*	−0.012	−0.068[+]	−0.035
	(0.023)	(0.024)	(0.036)	(0.033)
% own group in municipality		0.032		0.029
		(0.027)		(0.027)
x accent		−0.020		−0.019
		(0.013)		(0.012)
% own group in occupation			−0.044*	−0.041*
			(0.021)	(0.020)
x accent			0.013	0.012
			(0.013)	(0.012)
Observations	684	684	684	684

Source: CILS4EU and CILS4EU-DE, O*NET, German microcensus (RDC of the Federal Statistical Office and Statistical Offices of the Federal States, Microcensus, Scientific Use Files, survey years 2012–2016), microm, own calculations, results design-weighted. Standard errors are clustered on municipality level. Models additionally control for ethnic background, immigrant generation, parental education and ISEI, citizenship, year of birth, gender, school leaving degree, cognitive skills, vocabulary test, and differentiation of training and employment.
[+]$p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

could both be indications of certain self-selection processes. However, also here, interaction effects are not statistically significant.

Is employers' statistical discrimination behind the accent effect?

Whether a foreign accent is also perceived as a trigger for statistical discrimination is examined in the analyses presented in Models 1–4 in Table 3 (full models can be found in Appendix Table A8). In this table, we test the statistical discrimination argument more directly by including the interaction effects between two contextual measures: the prevalence of persons likely to speak with a foreign accent both in the living environment and in the workplace, and the strength of a foreign accent, first separately per measure (Model 2 and 3) and then simultaneously (Model 4). The analyses aim at examining whether employers' frequent contacts with accented speech – either at the workplace or in the residential area – may remedy their biases regarding the productivity of employees who speak with a foreign accent. To this end, we restrict our sample to those respondents who are actually in the labour market (work/VET, language important: yes/no). As can be seen from the results from these models, we find no indication of statistical discrimination. The strength of a foreign accent is not moderated by the characteristics of the working or the residential contexts.

Are there negative consequences of foreign accents beyond employability? Supplementary analyses

So far, our analyses have focused on the employability of respondents speaking the German language with a varying strength of the foreign accent. However, labour market entry, or access to specific occupations, are only a part of their labour market success. Occupations where language skills are less important may be similarly renumerated and may offer occupational prestige or career prospects on a par with

Table 4. The role of accent for ISEI and income (results from structural equation models applying FIML).

	ISEI		Income (log)	
	M1	M2	M3	M4
Accent	−0.791	−0.891	−0.014	−0.009
	(0.646)	(0.702)	(0.029)	(0.032)
Language is important for occupation	1.054	0.721	0.031	0.048
	(1.430)	(1.619)	(0.052)	(0.059)
x accent		0.647		−0.034
		(1.486)		(0.067)
Number of observations	699	699	699	699

Source: CILS4EU and CILS4EU-DE, O*NET, own calculations, results design-weighted. Models additionally control for ethnic background, immigrant generation, parental education and ISEI, citizenship, year of birth, gender, school leaving degree, cognitive skills, vocabulary test, and differentiation of training and employment. Models 3 and 4 also control for the ISEI of the occupation.
[+]$p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

occupations for which language skills are deemed as highly relevant. Therefore, in our final set of analyses, we focus on the subsample of respondents who have already entered the labour market, and we investigate the association between the strength of their foreign accent and the prestige of their occupation as well as the level of their income.[16] As can be seen from the OLS regression results presented in Model 1 (M1) and Model 3 (M3) in Table 4, the strength of the respondents' foreign accent is not statistically significantly correlated with their income or the ISEI score of their occupations (full models can be found in Appendix Table A9). Furthermore, we include interaction effects between the information on whether language is important for the occupation and the strength of foreign accent in Models 2 (M2) and 4 (M4). These non-significant interaction effects further support the finding that the strength of a foreign accent is not essential for how much salary an employee earns and how prestigious the employee's occupation is.

Therefore, it seems that despite having somewhat lower language-related human capital, respondents with a stronger foreign accent are able to maximise their productivity advantages in aspects unrelated to language. This results in them attaining occupations with similar prestige and income compared to those respondents without a strong foreign accent. This finding stands in contrast to the results of the analyses of job entry, where a foreign accent seems to matter when it comes to attaining an occupation with extensive language requirements. If employers or other gatekeepers had perceived a foreign accent as an obstacle to employment, thus triggering discrimination, we should have observed a significant accent effect both at job entry and regarding occupational outcomes, which is obviously not the case. Therefore, coming back to the question of the mechanism behind the association of the strength of foreign accent and the individual's employability, we take the latter finding as another indication that an employer's biased beliefs are less likely to be the reason behind the lower chance of individuals with accented speech being selected for specific occupations. Instead, self-selection mechanisms are more likely to be the reason. This is because individuals who speak with a stronger accent self-select into those jobs where they are likely to reap returns comparable to those of individuals who speak without a pronounced accent.

Discussion

This study contributes to the understanding of the reasons behind the challenging labour-market entry among immigrants and their descendants. We have added a previously neglected explanation – immigrants' foreign accents – to the list of explanatory factors such as inadequate educational qualifications, lack of vocational training, insufficient language proficiency, and deficiencies of relevant social-capital resources (Kalter and Kogan 2006; Lindemann and Kogan 2013; Müller and Shavit 1998; Nielsen et al. 2003; Tasiran and Tezic 2007). The aim of this empirical endeavour was not only to investigate whether and how the strength of a foreign accent is associated with employability and occupational prestige, but also to shed light on the underlying mechanisms. We addressed three potential mechanisms of whether differences in employability are due (1) to a foreign accent being an expression of a lack of relevant human capital, or (2) to individuals self-selecting into jobs or fields of study that require a corresponding level of language proficiency, or (3) to potentially discriminatory behaviour of employers based on their lack of information about the productivity of accented speakers (statistical discrimination).

The results of our analyses, taken as a whole, suggest that the first mechanism is the most likely explanation: a foreign accent is an expression of a lack of human capital. At first sight, respondents with a stronger accent are more likely to be in 'work/VET', and are less likely to be in tertiary education. However, when we differentiate within the actual occupation ('work/VET') or the aspired occupation ('studies') whether language is important or not, we find that respondents with a stronger foreign accent are less likely to be found in occupations where language is essential for executing the job.

Our analyses do not support the statistical discrimination hypothesis, as employers' perceptions of foreign accents are not updated in contexts which allow for extensive contact with accented speakers. And finally, we find no indication of employers penalising accented speakers in terms of occupational status or wages. We see this as another important indication against the discrimination explanation. Instead, it appears that despite having somewhat lower levels of language capital, respondents with a foreign accent seem to channel their human-capital resources into the areas where they can reap maximal returns, i.e. into jobs with lower communication and language requirements. This might be indicative of a self-selection mechanism.

Notwithstanding the theoretical contribution of our paper in considering both the employees' potential self-selection processes and the employers' potential responses, as well as the methodological contribution of applying an objective accent measurement, our study faces several limitations. First, our approach of analytically differentiating between demand side (employer) and supply side (employee) is of course challenging, given that anticipated discrimination on the demand side will consequently affect behaviour on the supply side (Fernandez-Mateo and Fernandez 2016). Moreover, in the absence of employer data, we rely on assumptions that need to be confirmed with actual data. Second, while the rating of the accented speech was carried out after the interview – thus preventing the influence of visual cues – we are not able to directly observe whether and how accented speech interacts with the above-mentioned visual cues during the hiring process.

Furthermore, our study focuses on respondents before their entry into the labour market or at an early stage of their entry into the labour market. It would be advisable to trace the work trajectories of the respondents and to investigate whether our results hold when we consider a later time span, i.e. when all respondents are settled in the labour market. Another limitation of this study is that we test the underlying mechanisms in a rather indirect way. Comparing the results of the analyses of labour-market entry with those for tertiary-education students led us to conclude that self-selection explanation may be of lesser or no importance. This self-selection explanation was tested rather indirectly and requires a more profound measurement for it to be ultimately rejected or accepted.

In addition, we lack longitudinal data to really depict a temporal process, which may be important to consider, e.g. when respondents adjust their aspirations in the light of experiences they make. We also do not have information to actually assess such potential processes, i.e. we do not have information about participants interests in or aspirations for different vocational areas or temporal changes therein which might influence self-selection processes. Furthermore, to probe the hypothesis of employer discrimination, we relied on proxy information instead of direct measurement of employer preferences. Therefore, in addition to including innovative ratings of accents in a large-scale survey, as in the current study, we suggest focusing more on the mechanism underlying the effects of foreign accents on the employability of individuals with a migration background. We suggest including survey items that would uncover job-seekers' actual job-search strategies and reveal employers' actual hiring behaviour.

Finally, in addition to foreign accent among immigrants and their descendants, regional accent may also play a role in creating inequalities, for example when individuals with a particular accent move to a region where that accent is not common. As part of the accent measurement in CILS4EU-DE, regional accent information was collected and coded for both natives and descendants of immigrants, which allows us to explore the extent to which inequality by social origin may be at least partially driven by linguistic cues. Thus, the data also allow for such new lines of inquiry, opening up opportunities for future research. One could also explore the question of whether a regional accent can be advantageous for immigrants, serving as a specific kind of linguistic 'assimilation marker'.

In sum, in this paper, we have uncovered yet another significant and previously neglected source of disadvantage that immigrants and their descendants may face – their accented speech. The results showed how foreign accents could affect labour market entry and the choice of fields of study when entering tertiary education. We have found that accent is part of human capital in occupations with a strong verbal component. There may also be self-selection out of jobs with high oral language requirements, although the evidence is not entirely in favour of self-selection in the choice of field of study. We found no evidence of statistical discrimination on the basis of accent. Since foreign accents are strongly linked to the timing or age of migration (Dollmann, Kogan, and Weißmann 2020) and are difficult to compensate for, this suggests a relatively persistent disadvantage for immigrants' employment biographies. At the same time, our results are not without an element of optimism: people with a strong accent may be restricted in their choice of certain occupations and fields of study, but they can still achieve a professional status and salary that is hardly inferior to that of people without a foreign accent.

Notes

1. N = 5,074 respondents agreed to participate in face-to-face interviews, while the remaining 746 respondents were interviewed via web or postal questionnaires or via telephone interviews. During the face-to-face interviews, 4,059 respondents agreed to be recorded which was the basis for our accent rating.
2. We grouped the vocational training programmes in this fashion since the number of respondents enrolled was too small to be analysed separately. We decided to group apprenticeships together with the work category as dual vocational training has a strong labour-market orientation. Trainees have to apply for apprenticeship positions with a training company, and they spend three to four days working on the job. Schools-based training courses also have practical phases, which differ between occupations.
3. Release version 25.0 (https://www.onetcenter.org/database.html).
4. While the classification is sponsored by U.S. Department of Labor/Employment and Training Administration (USDOL/ETA) and refers to US-American occupations, it is also used in research on European context (e.g. Hardy, Keister, and Lewandowski 2018).
5. In the following, we only describe the procedure for importance rating of the language domains. Further information can be found at https://www.onetcenter.org/reports.
6. http://ibs.org.pl/en/resources/occupation-classifications-crosswalks-from-onet-soc-to-isco/ (version from April 6, 2016; last accessed November 20, 2023).
7. NEPS is carried out by the Leibniz Institute for Educational Trajectories (LIfBi, Germany) in cooperation with a nationwide network.
8. Top five occupations coded as 'Language is not important' by our procedure (ISCO-08 code in brackets): General office clerks (4110); Dental assistants and therapists (3251); Medical assistants (3256); Agricultural and industrial machinery mechanics and repairers (7233); Accounting associate professionals (3313).Top five occupations coded as 'Language is important': Shop sales assistants (5223); Nursing associate professionals (3221); Child care workers (5311); Police officers (5421); Trade brokers (3324). Top five study subjects coded as 'Language is not important': Civil Engineering; Mechanical Engineering; Informatics; Civil Engineering; Business Informatics; Pharmaceutics. Top five study subjects coded as 'Language is important': Business Administrations; Interdisciplinary Studies (Focus Area: Law, Business and Social Science); Law; Medicine; German. All refer to our analytical sample (see below).
9. For initial panel respondents without information on these tests, we used information for achievement tests administered in wave one (the test consisted of 30 synonyms to pick from).
10. See Table A1 in the Appendix for the assignment of countries of origin as found in the CILS4EU-DE data to the respective groupings.
11. This information was taken from retrospective information on education histories from a life history calendar (LHC) administered in wave six as well as information from wave seven and wave eight. In addition, for respondents from the initial panel sample, we used repeated cross-sectional information about acquired degrees provided during wave two to wave eight.
12. We used the Scientific Use Files of the German Microcensus from the years 2012 to 2016 (RDC of the Federal Statistical Office and Statistical Offices of the Federal States, Microcensus, Scientific Use Files, survey years 2012–2016; all result used are own calculations).
13. As a robustness-check, we also focussed on respondents first job. For this, we made use of retrospective longitudinal information on respondents' education, training, and labour market careers from a life history calendar (LHC) in wave six. From this data set, we defined the first employment that lasted for more than six months after having left the education and training system for more than twelve months as the first job. If no such job occurs in the LHC, we used the first information on employment from either wave seven or wave eight. Respondents without employment information were coded as tertiary students if they reported to study during their last observed interview. The remaining respondents were coded as 'other status'. Even though point estimates seemed to be reduced, results from Tables A3 and A4 in the Appendix show comparable results to our main analyses.

14. We also tested whether a foreign accent means something different for different ethnic groups. Although such ethnic hierarchies seem plausible, we do not find significant interaction effects between ethnic groups and the strength of foreign accents except for respondents from Southern Europe (cf. Table A7 in Appendix). This finding is consistent with other findings regarding the role of foreign accents for the formation of friendships and romantic relationships (Kogan, Dollmann, and Weißmann 2021) as well as for the German school context (Lorenz et al. 2023), where the authors report that statistical relationships between non-native student accents and teacher achievement expectations in language and mathematical domains are independent of the concrete ethnic origin.

15. For respondents that have not applied for a position up until wave six, having a stronger accent is associated with a higher propensity of pursuing higher education in fields of study that typically lead to occupations where language is more important. However, no information is available as to why these respondents never have applied for any position which makes an informed interpretation difficult.

16. Income was provided in the data as categorical information which we replaced as follows: 0-200 Euro: 100 Euro; 401-600 Euro: 500 Euro; 601-800 Euro: 700 Euro; 801-1,000 Euro: 900 Euro; 1,001-1,200 Euro: 1,100 Euro; 1,201-1,400 Euro: 1,300 Euro; 1,401-1,600 Euro: 1,500 Euro; 1,601-1,800 Euro: 1,700 Euro; 1,801-2,000 Euro: 1,900 Euro; More than 2,000 Euro: 2,100 Euro.

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Ethical approval and informed consent

The CILS4EU-study obtained ethical approval from the ethical vetting board from the Universities of Stockholm, Oxford and Mannheim. The Dutch team did not need to obtain ethical approval, but they followed the same ethical standards as the other research teams. Furthermore, informed consent prior to participating in the survey was provided by all participants.

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Appendix

Table A1. Overview of countries in CILS4EU and grouped origin categories in the analyses.

Origin group	Country name in CILS4EU
Turkey	Turkey
Southern Europe	Albania, Cyprus, Greece, Italy, Portugal, Spain
Former Yugoslavian Republic	Bosnia and Herzegovina, Croatia, Montenegro, Serbia, Slovenia, The Former Yugoslav Republic of Macedonia, Socialist Federal Republic of Yugoslavia
Former Soviet Union/Central and Eastern Europe	Azerbaijan, Armenia, Bulgaria, Belarus, Czechoslovakia, Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Republic of Moldova, Poland, Romania, Russian Federation, Slovakia, Tajikistan, Turkmenistan, Ukraine, USSR, Uzbekistan, Former German Eastern Territories
Other Europe	Austria, Belgium, Europe, Denmark, Finland, France, Ireland, Luxembourg, Netherlands, Sweden, Switzerland, United Kingdom of Great Britain and Northern Ireland
Other countries	Afghanistan, Algeria, Americas, Angola, Argentina, Australia, Bangladesh, Brazil, Cambodia, Cameroon, Canada, Sri Lanka, Chile, China, Colombia, Congo, Democratic Republic of the Congo, Benin, Dominican Republic, Ecuador, Ethiopia, Eritrea, Gambia, Occupied Palestinian Territory, Ghana, Guinea, India, Indonesia, Islamic Republic of Iran, Iraq, Israel, Cote d'Ivoire, Jamaica, Japan, Jordan, Kenya, Republic of Korea, Lao People's Democratic Republic, Lebanon, Malaysia, Mexico, Morocco, Namibia, Nepal, Nicaragua, Niger, Nigeria, Pakistan, Peru, Philippines, Guinea-Bissau, Sao Tome and Principe, Saudi Arabia, Senegal, Sierra Leone, Viet Nam, Somalia, South Africa, Syrian Arab Republic, Thailand, Togo, Tunisia, Uganda, Egypt, United Republic of Tanzania, United States of America, United States Virgin Islands, Bolivarian Republic of Venezuela, Yemen, Kurdistan

Table A2. Descriptive statistics by situation in wave eight.

	All	Work/VET	Studies	Other	% missing
Mean value					
Foreign accent (0-8)	0.6	0.6	0.3	0.8	21.3
Cognitive test (0-1)	0.7	0.7	0.8	0.7	1.6
Vocabulary test (0-1)	0.4	0.4	0.5	0.3	1.6
Parents' highest ISEI	42.6	39.4	51.0	39.3	1.5
% own group in municipality		1.7			4.7
% own group in occupation		2.1			5.2
Column percentages					
Language is important for occupation					
No		64.3	38.1		0.0
Yes		35.7	61.9		0.0
Discrimination experience					
No	79.4	78.6	82.3	77.1	11.2
Yes	11.4	12.9	7.7	13.3	11.2
Never applied anywhere	9.2	8.6	9.9	9.6	11.2
Parents' highest education					
No degree	9.4	9.6	6.1	13.8	0.7
Lower secondary	25.4	27.9	14.1	34.8	0.7
Intermediate secondary	26.5	31.1	21.5	20.2	0.7
Abitur	17.0	15.6	21.0	15.2	0.7
University degree	21.7	15.7	37.2	16.0	0.7
Group of origin					
Turkey	24.3	27.2	17.0	26.9	0.4
Southern Europe	8.9	9.8	10.4	4.1	0.4
Former Yugoslavian Republic	5.9	5.2	3.3	11.7	0.4
FSU/CEE	34.6	37.6	31.6	30.3	0.4
Northern and Western Europe	6.3	4.7	11.1	4.1	0.4

(*Continued*)

Table A2. Continued.

	All	Work/VET	Studies	Other	% missing
Other	20.0	15.6	26.6	22.8	0.4
Migrant generation					
1st generation	19.8	19.4	21.8	17.9	0.0
2nd generation	68.2	67.0	67.6	72.6	0.0
3rd generation	12.0	13.6	10.6	9.5	0.0
German citizenship					
No	28.1	30.6	21.1	31.2	0.5
Yes	71.9	69.4	78.9	68.8	0.5
Year of birth					
Before 1995	23.7	25.4	12.9	35.0	0.0
1995	37.5	39.3	33.4	38.4	0.0
After 1995	38.8	35.3	53.7	26.7	0.0
Sex					
Male	41.2	41.3	43.7	37.2	0.0
Female	58.8	58.7	56.3	62.8	0.0
Highest education					
Lower sec./ below	16.3	17.4	2.1	34.5	0.9
Intermediate sec.	30.2	39.2	6.0	39.4	0.9
Fachabitur	18.6	21.3	18.0	11.8	0.9
Abitur	34.9	22.1	74.0	14.3	0.9
Number of observations	1,426	699	531	196	
Row percent	100.0	54.3	27.4	18.4	

Table A3. The role of accent for young people's first employment situation: full models (results from structural equation models applying FIML).

	M1			M2			M3			M4		
	Work/VET	Studies	Other	Work/VET	Studies	Other	Work/VET	Studies	Other	Work/VET	Studies	Other
Accent	−0.008	−0.039***	0.049***	−0.011	−0.033***	0.045***	−0.019	−0.015*	0.033**	−0.022	−0.010	0.032*
	(0.012)	(0.006)	(0.011)	(0.014)	(0.007)	(0.013)	(0.014)	(0.006)	(0.013)	(0.015)	(0.006)	(0.013)
Parents' highest ISEI				−0.002*	0.002***	−0.000	−0.001	0.001	0.000	−0.001	0.001	0.000
				(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Parents' highest education (ref. university)												
No certificate				0.152*	−0.168***	0.016	0.133[+]	−0.112**	−0.022	0.131[+]	−0.107**	−0.025
				(0.068)	(0.042)	(0.062)	(0.071)	(0.041)	(0.060)	(0.069)	(0.039)	(0.062)
Lower secondary degree				0.174***	−0.193***	0.020	0.137**	−0.106***	−0.031	0.141**	−0.101**	−0.041
				(0.052)	(0.037)	(0.046)	(0.051)	(0.032)	(0.045)	(0.049)	(0.032)	(0.043)
Intermediate secondary degree				0.165***	−0.180***	0.016	0.124**	−0.107***	−0.019	0.132**	−0.104***	−0.029
				(0.045)	(0.035)	(0.040)	(0.044)	(0.030)	(0.039)	(0.044)	(0.030)	(0.039)
Upper secondary degree				0.088[+]	−0.070[+]	−0.018	0.095*	−0.076*	−0.018	0.111*	−0.077*	−0.033
				(0.049)	(0.042)	(0.046)	(0.047)	(0.035)	(0.044)	(0.047)	(0.035)	(0.044)
Origin group (ref.: Turkey)												
Southern Europe				0.015	0.043	−0.056	0.038	0.003	−0.038	0.048	−0.002	−0.045
				(0.056)	(0.035)	(0.051)	(0.055)	(0.032)	(0.049)	(0.055)	(0.031)	(0.049)
Former Yugoslavian Republic				0.003	−0.042	0.039	0.001	−0.043[+]	0.042	0.011	−0.045[+]	0.034
				(0.073)	(0.032)	(0.067)	(0.069)	(0.026)	(0.066)	(0.069)	(0.026)	(0.065)
Former Soviet Union/Central and Eastern Europe				0.098*	−0.025	−0.071[+]	0.100*	−0.032	−0.067	0.102*	−0.038[+]	−0.064
				(0.044)	(0.026)	(0.041)	(0.044)	(0.022)	(0.041)	(0.044)	(0.023)	(0.041)
Northern and Western Europe				−0.037	0.023	0.016	−0.033	0.032	0.001	−0.034	0.022	0.011
				(0.076)	(0.062)	(0.073)	(0.077)	(0.047)	(0.071)	(0.078)	(0.047)	(0.072)
Other				−0.057	0.084**	−0.027	−0.029	0.038	−0.007	−0.025	0.035	−0.009
				(0.048)	(0.032)	(0.044)	(0.048)	(0.026)	(0.043)	(0.048)	(0.026)	(0.043)
Migrant generation (ref.: 3rd generation)												
1st generation				−0.135*	0.058	0.076	−0.100[+]	−0.005	0.106*	−0.097[+]	0.002	0.096*
				(0.061)	(0.044)	(0.048)	(0.059)	(0.035)	(0.050)	(0.057)	(0.035)	(0.048)
2nd generation				−0.097[+]	0.045	0.052	−0.075	−0.010	0.086*	−0.070	−0.008	0.078[+]
				(0.052)	(0.037)	(0.040)	(0.050)	(0.030)	(0.043)	(0.049)	(0.030)	(0.042)

(*Continued*)

Table A3. Continued.

	M1			M2			M3			M4		
	Work/VET	Studies	Other	Work/VET	Studies	Other	Work/VET	Studies	Other	Work/VET	Studies	Other
German citizenship				−0.037	0.003	0.036	−0.025	−0.024	0.049	−0.023	−0.026	0.049
				(0.039)	(0.024)	(0.036)	(0.038)	(0.021)	(0.034)	(0.038)	(0.020)	(0.035)
Year of birth (ref.: 1995)												
Before 1999				0.054	−0.081***	0.027	0.032	−0.027	−0.005	0.035	−0.028	−0.007
				(0.040)	(0.021)	(0.036)	(0.039)	(0.018)	(0.036)	(0.039)	(0.018)	(0.035)
After 1999				−0.106**	0.043+	0.064*	−0.094**	0.024	0.071*	−0.097**	0.022	0.075*
				(0.034)	(0.025)	(0.031)	(0.034)	(0.022)	(0.030)	(0.033)	(0.022)	(0.029)
Female				0.013	0.030	−0.043	0.032	−0.009	−0.023	0.031	−0.005	−0.026
				(0.030)	(0.020)	(0.027)	(0.030)	(0.017)	(0.027)	(0.029)	(0.018)	(0.026)
Highest education (ref.: upper secondary)												
Lower secondary or none							0.228***	−0.474***	0.256***	0.230***	−0.458***	0.235***
							(0.051)	(0.031)	(0.042)	(0.055)	(0.036)	(0.045)
Intermediate secondary							0.311***	−0.473***	0.171***	0.309***	−0.462***	0.160***
							(0.037)	(0.029)	(0.029)	(0.039)	(0.031)	(0.030)
Upper secondary vocational							0.244***	−0.286***	0.047	0.236***	−0.277***	0.046
							(0.043)	(0.039)	(0.029)	(0.044)	(0.040)	(0.031)
Vocabulary test										−0.242*	0.096	0.146
										(0.122)	(0.079)	(0.101)
Cognitive test										0.322**	0.021	−0.338**
										(0.114)	(0.054)	(0.107)
Number of observations	2,599	2,599	2,599	2,599	2,599	2,599	2,599	2,599	2,599	2,599	2,599	2,599

Source: CILS4EU and CILS4EU-DE, O*NET; own calculations results design-weighted.
+$p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A4. The role of accent for young people's first employment situation depending on occupations' language intensity: full models (results from structural equation models applying FIML).

	M1					M2				
	Work/VET – language not important	Work/VET – language important	Studies – language not important	Studies – language important	Other	Work/VET – language not important	Work/VET – language important	Studies – language not important	Studies – language important	Other
Accent	0.007	−0.015*	−0.010**	−0.029***	0.049***	0.004	−0.016	−0.009*	−0.023***	0.045***
	(0.013)	(0.007)	(0.004)	(0.004)	(0.011)	(0.015)	(0.010)	(0.005)	(0.005)	(0.013)
Discrimination experience x accent										
Never applied x accent										
Parents' highest ISEI						−0.000	−0.002*	0.001*	0.001**	−0.000
						(0.001)	(0.001)	(0.000)	(0.001)	(0.001)
Parents' highest education (ref. university)										
No certificate						0.068	0.084	−0.056+	−0.113***	0.016
						(0.069)	(0.066)	(0.030)	(0.031)	(0.062)
Lower secondary degree						0.136*	0.038	−0.077**	−0.116***	0.020
						(0.054)	(0.039)	(0.024)	(0.031)	(0.046)
Intermediate secondary degree						0.097*	0.068+	−0.076***	−0.105***	0.016
						(0.046)	(0.035)	(0.022)	(0.030)	(0.040)
Upper secondary degree						0.061	0.027	−0.015	−0.055+	−0.018
						(0.050)	(0.034)	(0.033)	(0.033)	(0.046)
Origin group (ref.: Turkey)										
Southern Europe						0.043	−0.028	0.003	0.041	−0.056
						(0.058)	(0.046)	(0.018)	(0.032)	(0.051)
Former Yugoslavian Republic						−0.033	0.037	−0.003	−0.039	0.039
						(0.067)	(0.062)	(0.018)	(0.028)	(0.067)
Former Soviet Union/ Central and Eastern Europe						0.114*	−0.016	0.005	−0.030	−0.071+
						(0.048)	(0.039)	(0.016)	(0.022)	(0.041)
Northern and Western Europe						−0.108+	0.070	0.046	−0.023	0.016
						(0.061)	(0.073)	(0.058)	(0.044)	(0.073)
Other						−0.042	−0.014	0.085***	−0.001	−0.027
						(0.049)	(0.040)	(0.025)	(0.022)	(0.044)

(*Continued*)

Table A4. Continued.

	M1					M2				
	Work/VET – language not important	Work/VET – language important	Studies – language not important	Studies – language important	Other	Work/VET – language not important	Work/VET – language important	Studies – language not important	Studies – language important	Other
Migrant generation (ref.: 3rd generation)										
1st generation						−0.050	−0.085	0.021	0.037	0.076
						(0.074)	(0.063)	(0.026)	(0.038)	(0.048)
2nd generation						−0.055	−0.042	0.028	0.017	0.052
						(0.065)	(0.058)	(0.019)	(0.033)	(0.040)
German citizenship						−0.003	−0.034	−0.012	0.015	0.036
						(0.040)	(0.033)	(0.017)	(0.019)	(0.036)
Year of birth (ref.: 1995)										
Before 1999						−0.005	0.059$^+$	−0.032*	−0.049**	0.027
						(0.043)	(0.035)	(0.014)	(0.016)	(0.036)
After 1999						−0.134***	0.028	0.005	0.038$^+$	0.064*
						(0.035)	(0.029)	(0.017)	(0.020)	(0.031)
Female						−0.093**	0.106***	−0.022	0.052**	−0.043
						(0.031)	(0.025)	(0.014)	(0.016)	(0.027)
Highest education (ref.: upper secondary)										
Lower secondary or none										
Intermediate secondary										
Upper secondary vocational										
Vocabulary test										
Cognitive test										
Number of observations	2,599	2,599	2,599	2,599	2,599	2,599	2,599	2,599	2,599	2,599

Table A4. Continued.

	M3					M4				
	Work/VET – language not important	Work/VET – language important	Studies – language not important	Studies – language important	Other	Work/VET – language not important	Work/VET – language important	Studies – language not important	Studies – language important	Other
Accent	0.001	−0.021*	−0.002	−0.012**	0.033**	0.003	−0.027*	−0.001	−0.009[+]	0.032*
	(0.016)	(0.010)	(0.004)	(0.005)	(0.013)	(0.016)	(0.011)	(0.005)	(0.005)	(0.013)
Discrimination experience x accent										
Never applied x accent										
Parents' highest ISEI	0.000	−0.001	0.000	0.000	0.000	0.000	−0.001	0.000	0.000	0.000
	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)
Parents' highest education (ref. university)										
No certificate	0.058	0.077	−0.035	−0.078*	−0.022	0.061	0.072	−0.033	−0.074*	−0.025
	(0.068)	(0.070)	(0.031)	(0.031)	(0.060)	(0.068)	(0.066)	(0.031)	(0.030)	(0.062)
Lower secondary degree	0.112*	0.024	−0.045[+]	−0.062*	−0.031	0.119*	0.022	−0.042[+]	−0.059*	−0.041
	(0.053)	(0.040)	(0.024)	(0.029)	(0.045)	(0.053)	(0.040)	(0.024)	(0.029)	(0.043)
Intermediate secondary degree	0.069	0.054	−0.048*	−0.058*	−0.019	0.076[+]	0.055	−0.045*	−0.058*	−0.029
	(0.046)	(0.035)	(0.022)	(0.028)	(0.039)	(0.045)	(0.036)	(0.022)	(0.027)	(0.039)
Upper secondary degree	0.066	0.029	−0.017	−0.059[+]	−0.018	0.075	0.036	−0.012	−0.065*	−0.033
	(0.048)	(0.034)	(0.030)	(0.031)	(0.044)	(0.048)	(0.035)	(0.031)	(0.032)	(0.044)
Origin group (ref.: Turkey)										
Southern Europe	0.059	−0.022	−0.012	0.015	−0.038	0.056	−0.008	−0.010	0.008	−0.045
	(0.058)	(0.046)	(0.018)	(0.030)	(0.049)	(0.058)	(0.047)	(0.018)	(0.030)	(0.049)
Former Yugoslavian Republic	−0.033	0.035	−0.003	−0.040	0.042	−0.029	0.041	−0.001	−0.044[+]	0.034
	(0.064)	(0.061)	(0.017)	(0.025)	(0.066)	(0.064)	(0.061)	(0.018)	(0.025)	(0.065)
Former Soviet Union/Central and Eastern Europe	0.117*	−0.016	0.003	−0.035[+]	−0.067	0.108*	−0.006	0.002	−0.040*	−0.064
	(0.048)	(0.039)	(0.015)	(0.020)	(0.041)	(0.049)	(0.040)	(0.015)	(0.020)	(0.041)
Northern and Western Europe	−0.102	0.068	0.050	−0.018	0.001	−0.115[+]	0.080	0.046	−0.024	0.011
	(0.062)	(0.072)	(0.053)	(0.043)	(0.071)	(0.063)	(0.073)	(0.054)	(0.043)	(0.072)
Other	−0.022	−0.007	0.068**	−0.030	−0.007	−0.024	−0.000	0.068**	−0.034[+]	−0.009
	(0.048)	(0.039)	(0.023)	(0.021)	(0.043)	(0.047)	(0.041)	(0.023)	(0.020)	(0.043)

(*Continued*)

Table A4. Continued.

	M3					M4				
	Work/VET – language not important	Work/VET – language important	Studies – language not important	Studies – language important	Other	Work/VET – language not important	Work/VET – language important	Studies – language not important	Studies – language important	Other
Migrant generation (ref.: 3rd generation)										
1st generation	−0.030	−0.069	−0.003	−0.002	0.106*	−0.020	−0.076	0.001	0.002	0.096*
	(0.071)	(0.062)	(0.025)	(0.032)	(0.050)	(0.070)	(0.061)	(0.025)	(0.032)	(0.048)
2nd generation	−0.042	−0.032	0.007	−0.017	0.086*	−0.037	−0.032	0.010	−0.017	0.078+
	(0.061)	(0.058)	(0.018)	(0.029)	(0.043)	(0.061)	(0.058)	(0.019)	(0.029)	(0.042)
German citizenship	0.004	−0.029	−0.021	−0.002	0.049	0.003	−0.027	−0.021	−0.005	0.049
	(0.039)	(0.034)	(0.017)	(0.017)	(0.034)	(0.039)	(0.033)	(0.016)	(0.017)	(0.035)
Year of birth (ref.: 1995)										
Before 1999	−0.018	0.050	−0.012	−0.016	−0.005	−0.016	0.051	−0.011	−0.018	−0.007
	(0.043)	(0.034)	(0.014)	(0.014)	(0.036)	(0.042)	(0.034)	(0.014)	(0.014)	(0.035)
After 1999	−0.124***	0.031	−0.002	0.025	0.071*	−0.126***	0.029	−0.002	0.025	0.075*
	(0.034)	(0.029)	(0.017)	(0.019)	(0.030)	(0.034)	(0.028)	(0.017)	(0.019)	(0.029)
Female	−0.081**	0.113***	−0.036**	0.028+	−0.023	−0.079*	0.109***	−0.035*	0.031*	−0.026
	(0.031)	(0.026)	(0.014)	(0.015)	(0.027)	(0.031)	(0.026)	(0.014)	(0.015)	(0.026)
Highest education (ref.: upper secondary)										
Lower secondary or none	0.136**	0.092*	−0.179***	−0.294***	0.256***	0.158**	0.072	−0.169***	−0.287***	0.235***
	(0.050)	(0.047)	(0.025)	(0.025)	(0.042)	(0.054)	(0.051)	(0.028)	(0.027)	(0.045)
Intermediate secondary	0.221***	0.089**	−0.173***	−0.299***	0.171***	0.232***	0.076*	−0.168***	−0.293***	0.160***
	(0.037)	(0.033)	(0.022)	(0.025)	(0.029)	(0.039)	(0.036)	(0.024)	(0.026)	(0.030)
Upper secondary vocational	0.157***	0.087*	−0.107***	−0.178***	0.047	0.161***	0.074+	−0.106***	−0.171***	0.046
	(0.041)	(0.036)	(0.028)	(0.035)	(0.029)	(0.043)	(0.039)	(0.029)	(0.035)	(0.031)
Vocabulary test						−0.039	−0.204	−0.040	0.134*	0.146
						(0.120)	(0.127)	(0.054)	(0.063)	(0.101)
Cognitive test						0.243*	0.077	0.104*	−0.081+	−0.338**
						(0.111)	(0.092)	(0.042)	(0.041)	(0.107)
Number of observations	2,599	2,599	2,599	2,599	2,599	2,599	2,599	2,599	2,599	2,599

Table A4. Continued.

	M5				
	Work/VET – language not important	Work/VET – language important	Studies – language not important	Studies – language important	Other
Accent	0.016	−0.029*	−0.001	−0.012*	0.025[+]
	(0.018)	(0.011)	(0.005)	(0.006)	(0.015)
Discrimination	−0.011	0.105	−0.016	−0.056*	−0.017
experience	(0.079)	(0.071)	(0.024)	(0.027)	(0.059)
x accent	−0.025	0.005	0.007	0.009	−0.000
	(0.033)	(0.027)	(0.010)	(0.011)	(0.028)
Never applied	−0.056	−0.130***	0.025	−0.027	0.169**
	(0.070)	(0.038)	(0.036)	(0.030)	(0.058)
x accent	−0.065*	0.007	−0.010	0.018*	0.046[+]
	(0.027)	(0.018)	(0.011)	(0.009)	(0.024)
Parents' highest ISEI	0.000	−0.001	0.000	0.000	0.001
	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)
Parents' highest education (ref. university)					
No certificate	0.072	0.073	−0.033	−0.073*	−0.036
	(0.068)	(0.064)	(0.030)	(0.029)	(0.062)
Lower secondary degree	0.126*	0.021	−0.042[+]	−0.059*	−0.046
	(0.052)	(0.040)	(0.024)	(0.029)	(0.043)
Intermediate secondary	0.077[+]	0.060[+]	−0.047*	−0.059*	−0.031
degree	(0.045)	(0.036)	(0.022)	(0.027)	(0.038)
Upper secondary degree	0.071	0.030	−0.013	−0.063*	−0.024
	(0.048)	(0.034)	(0.031)	(0.032)	(0.044)
Origin group (ref.: Turkey)					
Southern Europe	0.048	0.007	−0.010	0.002	−0.045
	(0.057)	(0.049)	(0.019)	(0.030)	(0.051)
Former Yugoslavian	−0.033	0.057	−0.002	−0.052*	0.031
Republic	(0.065)	(0.060)	(0.018)	(0.025)	(0.066)
Former Soviet Union/	0.109*	0.011	0.002	−0.049*	−0.071[+]
Central and Eastern	(0.048)	(0.039)	(0.016)	(0.020)	(0.041)
Europe					
Northern and Western	−0.106[+]	0.097	0.047	−0.036	−0.003
Europe	(0.063)	(0.073)	(0.054)	(0.043)	(0.071)
Other	−0.017	0.009	0.068**	−0.035[+]	−0.021
	(0.048)	(0.040)	(0.023)	(0.020)	(0.043)
Migrant generation (ref.: 3rd generation)					
1st generation	−0.017	−0.065	−0.001	0.004	0.082[+]
	(0.070)	(0.059)	(0.025)	(0.033)	(0.047)
2nd generation	−0.038	−0.025	0.009	−0.017	0.073[+]
	(0.061)	(0.055)	(0.019)	(0.029)	(0.041)
German citizenship	0.003	−0.024	−0.021	−0.007	0.048
	(0.039)	(0.033)	(0.017)	(0.017)	(0.035)
Year of birth (ref.: 1995)					
Before 1999	−0.013	0.046	−0.010	−0.017	−0.005
	(0.042)	(0.034)	(0.014)	(0.014)	(0.035)
After 1999	−0.122***	0.037	−0.003	0.023	0.067*
	(0.034)	(0.027)	(0.017)	(0.019)	(0.029)
Female	−0.077*	0.115***	−0.035*	0.030*	−0.032
	(0.030)	(0.026)	(0.014)	(0.015)	(0.026)
Highest education (ref.: upper secondary)					
Lower secondary or none	0.159**	0.080[+]	−0.170***	−0.288***	0.225***
	(0.054)	(0.048)	(0.028)	(0.026)	(0.046)
Intermediate secondary	0.229***	0.080*	−0.169***	−0.294***	0.160***
	(0.038)	(0.033)	(0.024)	(0.025)	(0.029)
Upper secondary	0.154***	0.074*	−0.106***	−0.172***	0.053[+]
vocational	(0.043)	(0.037)	(0.028)	(0.035)	(0.031)
Vocabulary test	−0.042	−0.181	−0.043	0.129*	0.132
	(0.119)	(0.116)	(0.053)	(0.062)	(0.101)

(*Continued*)

Table A4. Continued.

	M5				
	Work/VET – language not important	Work/VET – language important	Studies – language not important	Studies – language important	Other
Cognitive test	0.216[+]	0.056	0.106*	−0.082[+]	−0.298**
	(0.111)	(0.091)	(0.043)	(0.042)	(0.104)
Number of observations	2,599	2,599	2,599	2,599	2,599

Source: CILS4EU and CILS4EU-DE, O*NET, NEPS SC5; own calculations results design-weighted.
[+]$p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A5. The role of accent for young people's current situation: full models (results from structural equation models applying FIML).

	M1			M2		
	Work/VET	Studies	Other	Work/VET	Studies	Other
Accent	0.030	−0.057***	0.041[+]	0.020	−0.037**	0.025
	(0.019)	(0.010)	(0.022)	(0.019)	(0.013)	(0.021)
Parents' highest ISEI				−0.003**	0.003***	−0.000
				(0.001)	(0.001)	(0.001)
Parents' highest education (ref. university)						
No certificate				0.044	−0.160*	0.110
				(0.089)	(0.062)	(0.077)
Lower secondary degree				0.090	−0.171**	0.079
				(0.070)	(0.052)	(0.064)
Intermediate secondary degree				0.165**	−0.159***	−0.006
				(0.058)	(0.046)	(0.052)
Upper secondary degree				0.057	−0.058	−0.001
				(0.063)	(0.053)	(0.059)
Origin group (ref.: Turkey)						
Southern Europe				0.036	0.035	−0.067
				(0.067)	(0.055)	(0.049)
Former Yugoslavian Republic				−0.117	−0.058	0.174[+]
				(0.106)	(0.051)	(0.095)
Former Soviet Union/Central and Eastern Europe				0.052	−0.066	0.015
				(0.064)	(0.042)	(0.057)
Northern and Western Europe				−0.064	0.087	−0.018
				(0.089)	(0.077)	(0.071)
Other				−0.114[+]	0.080	0.035
				(0.065)	(0.049)	(0.059)
Migrant generation (ref.: 3rd generation)						
1st generation				−0.112	0.109[+]	−0.003
				(0.083)	(0.061)	(0.070)
2nd generation				−0.098	0.043	0.054
				(0.070)	(0.049)	(0.063)
German citizenship				−0.054	0.011	0.050
				(0.049)	(0.038)	(0.045)
Year of birth (ref.: 1995)						
Before 1999				0.009	−0.104**	0.095[+]
				(0.054)	(0.032)	(0.051)
After 1999				−0.049	0.088*	−0.038
				(0.043)	(0.036)	(0.036)

(*Continued*)

Table A5. Continued.

	M1			M2		
	Work/ VET	Studies	Other	Work/VET	Studies	Other
Female				−0.019	−0.016	0.036
				(0.039)	(0.030)	(0.035)
Highest education (ref.: upper secondary)						
Lower secondary or none						
Intermediate secondary						
Upper secondary vocational						
Vocabulary test						
Cognitive test						
Number of observations	2,241	2,241	2,241	2,241	2,241	2,241

Table A5. Continued.

	M3			M4		
	Work/VET	Studies	Other	Work/VET	Studies	Other
Accent	0.007	−0.024*	0.022	−0.007	−0.017	0.028
	(0.021)	(0.011)	(0.020)	(0.022)	(0.012)	(0.020)
Parents' highest ISEI	−0.002[+]	0.001	0.001	−0.002	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Parents' highest education (ref. university)						
No certificate	0.037	−0.131*	0.091	0.032	−0.127*	0.095
	(0.093)	(0.063)	(0.070)	(0.090)	(0.060)	(0.070)
Lower secondary degree	0.066	−0.108*	0.042	0.060	−0.104*	0.044
	(0.070)	(0.046)	(0.060)	(0.070)	(0.046)	(0.060)
Intermediate secondary degree	0.134*	−0.107*	−0.027	0.130*	−0.104*	−0.025
	(0.058)	(0.042)	(0.048)	(0.058)	(0.042)	(0.048)
Upper secondary degree	0.075	−0.080[+]	0.004	0.082	−0.086[+]	0.004
	(0.061)	(0.047)	(0.056)	(0.061)	(0.047)	(0.056)
Origin group (ref.: Turkey)						
Southern Europe	0.056	−0.002	−0.052	0.075	−0.015	−0.059
	(0.064)	(0.051)	(0.048)	(0.064)	(0.050)	(0.050)
Former Yugoslavian Republic	−0.128	−0.045	0.174*	−0.127	−0.047	0.174*
	(0.096)	(0.041)	(0.086)	(0.096)	(0.042)	(0.086)
Former Soviet Union/Central and Eastern Europe	0.050	−0.066[+]	0.016	0.066	−0.076*	0.010
	(0.062)	(0.037)	(0.054)	(0.063)	(0.037)	(0.056)
Northern and Western Europe	−0.060	0.093	−0.030	−0.038	0.076	−0.038
	(0.090)	(0.068)	(0.070)	(0.091)	(0.067)	(0.070)
Other	−0.092	0.048	0.043	−0.081	0.042	0.039
	(0.064)	(0.040)	(0.056)	(0.064)	(0.040)	(0.057)
Migrant generation (ref.: 3rd generation)						
1st generation	−0.066	0.025	0.038	−0.074	0.030	0.042
	(0.080)	(0.053)	(0.066)	(0.081)	(0.053)	(0.066)
2nd generation	−0.077	−0.015	0.093	−0.079	−0.015	0.094
	(0.070)	(0.045)	(0.059)	(0.070)	(0.045)	(0.059)
German citizenship	−0.043	−0.025	0.072[+]	−0.037	−0.034	0.075[+]
	(0.049)	(0.034)	(0.042)	(0.048)	(0.034)	(0.041)
Year of birth (ref.: 1995)						
Before 1999	−0.020	−0.025	0.044	−0.015	−0.029	0.044
	(0.054)	(0.029)	(0.048)	(0.053)	(0.028)	(0.048)
After 1999	−0.031	0.050	−0.018	−0.029	0.047	−0.017
	(0.043)	(0.033)	(0.034)	(0.042)	(0.033)	(0.034)

(*Continued*)

Table A5. Continued.

	M3			M4		
	Work/VET	Studies	Other	Work/VET	Studies	Other
Female	−0.014	−0.020	0.034	−0.023	−0.014	0.037
	(0.039)	(0.027)	(0.033)	(0.039)	(0.027)	(0.034)
Highest education (ref.: upper secondary)						
Lower secondary or none	0.173*	−0.459***	0.284***	0.125	−0.429***	0.304***
	(0.080)	(0.043)	(0.071)	(0.085)	(0.049)	(0.074)
Intermediate secondary	0.306***	−0.460***	0.153***	0.274***	−0.440***	0.166***
	(0.049)	(0.038)	(0.035)	(0.052)	(0.041)	(0.038)
Upper secondary vocational	0.244***	−0.277***	0.032	0.220***	−0.261***	0.041
	(0.051)	(0.047)	(0.032)	(0.053)	(0.048)	(0.034)
Vocabulary test				−0.269	0.193	0.084
				(0.167)	(0.119)	(0.123)
Cognitive test				−0.079	0.021	0.058
				(0.154)	(0.095)	(0.133)
Number of observations	2,241	2,241	2,241	2,241	2,241	2,241

Source: CILS4EU and CILS4EU-DE, O*NET; own calculations results design-weighted.
$^{+}p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A6. The role of accent for young people's current situation depending on occupations' language intensity: full models (results from structural equation models applying FIML).

	M1					M2				
	Work/VET – language not important	Work/VET – language important	Studies – language not important	Studies – language important	Other	Work/VET – language not important	Work/VET – language important	Studies – language not important	Studies – language important	Other
Accent	0.042*	−0.012	−0.018**	−0.038***	0.041[+]	0.043*	−0.026	−0.011	−0.024*	0.025
	(0.021)	(0.013)	(0.006)	(0.008)	(0.022)	(0.021)	(0.016)	(0.008)	(0.010)	(0.021)
Discrimination experience x accent										
Never applied x accent										
Parents' highest ISEI						−0.001	−0.002*	0.001[+]	0.002**	−0.000
						(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Parents' highest education (ref. university)										
No certificate						−0.088	0.133	−0.014	−0.147**	0.110
						(0.081)	(0.085)	(0.048)	(0.047)	(0.077)
Lower secondary degree						0.028	0.062	−0.043	−0.128**	0.079
						(0.069)	(0.055)	(0.036)	(0.045)	(0.064)
Intermediate secondary degree						0.069	0.095*	−0.052	−0.107**	−0.006
						(0.058)	(0.043)	(0.032)	(0.041)	(0.052)
Upper secondary degree						0.013	0.045	−0.000	−0.058	−0.001
						(0.062)	(0.040)	(0.043)	(0.046)	(0.059)
Origin group (ref.: Turkey)										
Southern Europe						−0.002	0.037	−0.007	0.043	−0.067
						(0.073)	(0.062)	(0.024)	(0.052)	(0.049)
Former Yugoslavian Republic						−0.062	−0.055	−0.013	−0.046	0.174[+]
						(0.090)	(0.069)	(0.020)	(0.049)	(0.095)
Former Soviet Union/Central and Eastern Europe						0.027	0.026	0.015	−0.081*	0.015
						(0.061)	(0.051)	(0.024)	(0.037)	(0.057)
Northern and Western Europe						−0.104	0.040	0.141[+]	−0.054	−0.018
						(0.073)	(0.078)	(0.081)	(0.066)	(0.071)
Other						−0.114[+]	0.000	0.126***	−0.046	0.035
						(0.063)	(0.050)	(0.037)	(0.035)	(0.059)
Migrant generation (ref.: 3rd generation)										
1st generation						−0.068	−0.043	0.029	0.079	−0.003
						(0.083)	(0.071)	(0.041)	(0.054)	(0.070)

(*Continued*)

Table A6. Continued.

	M1					M2				
	Work/VET – language not important	Work/VET – language important	Studies – language not important	Studies – language important	Other	Work/VET – language not important	Work/VET – language important	Studies – language not important	Studies – language important	Other
2nd generation						−0.006 (0.071)	−0.092 (0.065)	0.019 (0.030)	0.024 (0.044)	0.054 (0.063)
German citizenship						0.022 (0.049)	−0.080+ (0.041)	−0.007 (0.026)	0.019 (0.033)	0.050 (0.045)
Year of birth (ref.: 1995)										
Before 1999						−0.032 (0.054)	0.042 (0.046)	−0.048* (0.022)	−0.056* (0.025)	0.095+ (0.051)
After 1999						−0.074+ (0.042)	0.024 (0.036)	0.017 (0.025)	0.071* (0.030)	−0.038 (0.036)
Female						−0.132*** (0.039)	0.112*** (0.029)	−0.031 (0.021)	0.015 (0.024)	0.036 (0.035)
Highest education (ref.: upper secondary)										
Lower secondary or none										
Intermediate secondary										
Upper secondary vocational										
Vocabulary test										
Cognitive test										
Number of observations	2,241	2,241	2,241	2,241	2,241	2,241	2,241	2,241	2,241	2,241

Table A6. Continued.

	M3					M4				
	Work/VET – language not important	Work/VET – language important	Studies – language not important	Studies – language important	Other	Work/VET – language not important	Work/VET – language important	Studies – language not important	Studies – language important	Other
Accent	0.034	−0.031[+]	−0.005	−0.018*	0.022	0.025	−0.035*	−0.006	−0.011	0.028
	(0.023)	(0.017)	(0.007)	(0.009)	(0.020)	(0.024)	(0.018)	(0.008)	(0.009)	(0.020)
Discrimination experience x accent										
Never applied x accent										
Parents' highest ISEI	−0.001	−0.002[+]	0.001	0.001	0.001	−0.000	−0.001	0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Parents' highest education (ref. university)										
No certificate	−0.094	0.133	−0.008	−0.124**	0.091	−0.094	0.128	−0.005	−0.123**	0.095
	(0.077)	(0.089)	(0.049)	(0.046)	(0.070)	(0.079)	(0.085)	(0.050)	(0.044)	(0.070)
Lower secondary degree	0.013	0.053	−0.024	−0.084*	0.042	0.010	0.050	−0.024	−0.080[+]	0.044
	(0.066)	(0.055)	(0.036)	(0.043)	(0.060)	(0.066)	(0.054)	(0.035)	(0.042)	(0.060)
Intermediate secondary degree	0.047	0.086*	−0.034	−0.073[+]	−0.027	0.041	0.088*	−0.029	−0.075[+]	−0.025
	(0.057)	(0.043)	(0.032)	(0.039)	(0.048)	(0.057)	(0.044)	(0.032)	(0.039)	(0.048)
Upper secondary degree	0.026	0.049	−0.009	−0.071	0.004	0.025	0.057	−0.001	−0.085[+]	0.004
	(0.059)	(0.041)	(0.042)	(0.044)	(0.056)	(0.059)	(0.042)	(0.042)	(0.044)	(0.056)
Origin group (ref.: Turkey)										
Southern Europe	0.010	0.045	−0.021	0.019	−0.052	0.014	0.061	−0.020	0.005	−0.059
	(0.070)	(0.060)	(0.023)	(0.050)	(0.048)	(0.070)	(0.062)	(0.023)	(0.049)	(0.050)
Former Yugoslavian Republic	−0.060	−0.070	−0.006	−0.039	0.174*	−0.065	−0.063	0.002	−0.049	0.174*
	(0.081)	(0.069)	(0.020)	(0.044)	(0.086)	(0.080)	(0.070)	(0.021)	(0.045)	(0.086)
Former Soviet Union/Central and Eastern Europe	0.030	0.020	0.016	−0.082*	0.016	0.038	0.029	0.013	−0.089**	0.010
	(0.058)	(0.050)	(0.023)	(0.034)	(0.054)	(0.060)	(0.051)	(0.023)	(0.033)	(0.056)
Northern and Western Europe	−0.089	0.027	0.144[+]	−0.051	−0.030	−0.078	0.040	0.139[+]	−0.062	−0.038
	(0.071)	(0.076)	(0.078)	(0.066)	(0.070)	(0.072)	(0.079)	(0.079)	(0.065)	(0.070)
Other	−0.093	0.001	0.115***	−0.066*	0.043	−0.089	0.008	0.114***	−0.072*	0.039
	(0.060)	(0.051)	(0.034)	(0.032)	(0.056)	(0.060)	(0.052)	(0.034)	(0.032)	(0.057)
Migrant generation (ref.: 3rd generation)										
1st generation	−0.051	−0.013	−0.003	0.027	0.038	−0.052	−0.021	−0.000	0.029	0.042
	(0.081)	(0.068)	(0.041)	(0.049)	(0.066)	(0.082)	(0.067)	(0.041)	(0.048)	(0.066)

Table A6. Continued.

	M3					M4				
	Work/VET – language not important	Work/VET – language important	Studies – language not important	Studies – language important	Other	Work/VET – language not important	Work/VET – language important	Studies – language not important	Studies – language important	Other
2nd generation	−0.004	−0.074	−0.001	−0.015	0.093	−0.006	−0.074	0.002	−0.017	0.094
	(0.069)	(0.063)	(0.030)	(0.041)	(0.059)	(0.070)	(0.062)	(0.030)	(0.041)	(0.059)
German citizenship	0.021	−0.068	−0.018	−0.006	0.072$^+$	0.021	−0.062	−0.016	−0.017	0.075$^+$
	(0.047)	(0.042)	(0.025)	(0.031)	(0.042)	(0.047)	(0.041)	(0.025)	(0.030)	(0.041)
Year of birth (ref.: 1995)										
Before 1999	−0.039	0.019	−0.022	−0.003	0.044	−0.039	0.024	−0.017	−0.012	0.044
	(0.051)	(0.045)	(0.022)	(0.023)	(0.048)	(0.050)	(0.044)	(0.022)	(0.024)	(0.048)
After 1999	−0.064	0.032	0.004	0.046	−0.018	−0.059	0.030	0.001	0.046	−0.017
	(0.040)	(0.037)	(0.024)	(0.029)	(0.034)	(0.040)	(0.036)	(0.024)	(0.029)	(0.034)
Female	−0.129***	0.115***	−0.033	0.013	0.034	−0.136***	0.113***	−0.030	0.016	0.037
	(0.038)	(0.030)	(0.020)	(0.023)	(0.033)	(0.038)	(0.030)	(0.021)	(0.023)	(0.034)
Highest education (ref.: upper secondary)										
Lower secondary or none	0.021	0.154*	−0.156***	−0.304***	0.284***	−0.005	0.130$^+$	−0.142***	−0.287***	0.304***
	(0.071)	(0.070)	(0.037)	(0.031)	(0.071)	(0.077)	(0.074)	(0.042)	(0.034)	(0.074)
Intermediate secondary	0.235***	0.071$^+$	−0.167***	−0.292***	0.153***	0.216***	0.058	−0.157***	−0.283***	0.166***
	(0.046)	(0.041)	(0.028)	(0.032)	(0.035)	(0.050)	(0.044)	(0.031)	(0.034)	(0.038)
Upper secondary vocational	0.113*	0.131**	−0.125***	−0.152***	0.032	0.103*	0.117*	−0.124***	−0.137**	0.041
	(0.047)	(0.041)	(0.035)	(0.044)	(0.032)	(0.048)	(0.046)	(0.037)	(0.044)	(0.034)
Vocabulary test						−0.066	−0.209	−0.066	0.259**	0.084
						(0.148)	(0.167)	(0.087)	(0.096)	(0.123)
Cognitive test						−0.157	0.078	0.182*	−0.157*	0.058
						(0.148)	(0.136)	(0.075)	(0.076)	(0.133)
Number of observations	2,241	2,241	2,241	2,241	2,241	2,241	2,241	2,241	2,241	2,241

Table A6. Continued.

	M5 Work/VET – language not important	Work/VET – language important	Studies – language not important	Studies – language important	Other
Accent	0.035	−0.044**	−0.006	−0.012	0.028
	(0.025)	(0.016)	(0.009)	(0.010)	(0.023)
Discrimination experience	−0.058	0.052	−0.019	−0.062	0.091
	(0.100)	(0.087)	(0.040)	(0.047)	(0.070)
x accent	−0.017	0.056	0.023	−0.012	−0.052
	(0.061)	(0.053)	(0.018)	(0.023)	(0.040)
Never applied	0.109	−0.066	0.047	−0.029	−0.067
	(0.108)	(0.060)	(0.060)	(0.048)	(0.074)
x accent	−0.093	−0.040	−0.032	0.060*	0.099
	(0.077)	(0.058)	(0.024)	(0.028)	(0.064)
Parents' highest ISEI	−0.000	−0.002[+]	0.000	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Parents' highest education (ref. university)					
No certificate	−0.083	0.128	−0.006	−0.120**	0.086
	(0.079)	(0.080)	(0.049)	(0.044)	(0.071)
Lower secondary degree	0.016	0.043	−0.027	−0.076[+]	0.044
	(0.067)	(0.053)	(0.034)	(0.043)	(0.060)
Intermediate secondary degree	0.037	0.086*	−0.032	−0.072[+]	−0.018
	(0.056)	(0.044)	(0.031)	(0.038)	(0.047)
Upper secondary degree	0.027	0.048	−0.003	−0.080[+]	0.010
	(0.059)	(0.041)	(0.042)	(0.044)	(0.056)
Origin group (ref.: Turkey)					
Southern Europe	−0.004	0.078	−0.019	−0.005	−0.048
	(0.072)	(0.063)	(0.024)	(0.049)	(0.050)
Former Yugoslavian Republic	−0.071	−0.047	0.004	−0.061	0.175*
	(0.082)	(0.070)	(0.022)	(0.045)	(0.087)
Former Soviet Union/ Central and Eastern Europe	0.034	0.048	0.016	−0.106**	0.010
	(0.061)	(0.052)	(0.024)	(0.034)	(0.056)
Northern and Western Europe	−0.076	0.057	0.144[+]	−0.082	−0.042
	(0.073)	(0.080)	(0.079)	(0.065)	(0.071)
Other	−0.091	0.021	0.114***	−0.079*	0.036
	(0.058)	(0.051)	(0.034)	(0.032)	(0.057)
Migrant generation (ref.: 3rd generation)					
1st generation	−0.053	−0.020	−0.001	0.032	0.040
	(0.082)	(0.066)	(0.041)	(0.048)	(0.065)
2nd generation	−0.008	−0.072	0.002	−0.018	0.096
	(0.069)	(0.061)	(0.030)	(0.041)	(0.058)
German citizenship	0.020	−0.065	−0.015	−0.016	0.073[+]
	(0.046)	(0.041)	(0.025)	(0.030)	(0.041)
Year of birth (ref.: 1995)					
Before 1999	−0.035	0.021	−0.018	−0.013	0.047
	(0.050)	(0.043)	(0.022)	(0.024)	(0.048)
After 1999	−0.062	0.036	0.000	0.043	−0.015
	(0.041)	(0.035)	(0.024)	(0.028)	(0.034)
Female	−0.137***	0.117***	−0.029	0.014	0.034
	(0.038)	(0.029)	(0.021)	(0.023)	(0.033)
Highest education (ref.: upper secondary)					
Lower secondary or none	−0.014	0.146*	−0.142***	−0.295***	0.303***
	(0.073)	(0.068)	(0.042)	(0.034)	(0.073)
Intermediate secondary	0.212***	0.059	−0.158***	−0.284***	0.171***
	(0.049)	(0.040)	(0.031)	(0.034)	(0.038)
Upper secondary vocational	0.101*	0.112*	−0.124***	−0.135**	0.045
	(0.048)	(0.044)	(0.037)	(0.043)	(0.034)
Vocabulary test	−0.099	−0.198	−0.074	0.258**	0.112
	(0.140)	(0.150)	(0.085)	(0.095)	(0.120)

(*Continued*)

Table A6. Continued.

	M5 Work/VET – language not important	Work/VET – language important	Studies – language not important	Studies – language important	Other
Cognitive test	−0.162	0.069	0.181*	−0.155*	0.068
	(0.147)	(0.131)	(0.075)	(0.076)	(0.132)
Number of observations	2,241	2,241	2,241	2,241	2,241

Source: CILS4EU and CILS4EU-DE, O*NET, NEPS SC5; own calculations results design-weighted.
$^{+}p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A7. The role of accent for young people's current situation depending on occupations' language intensity, including interaction with origin. (results from structural equation models applying FIML).

	Work/VET – language not important	Work/VET – language important	Studies – language not important	Studies – language important	Other
Accent	−0.026	0.014	0.002	−0.009	0.022
	(0.054)	(0.045)	(0.011)	(0.020)	(0.045)
S-EUR	−0.095	0.159*	−0.008	0.010	−0.060
	(0.090)	(0.075)	(0.028)	(0.060)	(0.067)
x accent	0.136^{+}	−0.124*	−0.014	−0.006	−0.001
	(0.073)	(0.055)	(0.013)	(0.031)	(0.073)
FYR	−0.098	0.003	−0.003	−0.023	0.124
	(0.102)	(0.089)	(0.032)	(0.080)	(0.116)
x accent	0.035	−0.066	0.005	−0.027	0.050
	(0.083)	(0.080)	(0.018)	(0.047)	(0.104)
FSU/CEE	−0.024	0.073	0.017	−0.082*	0.019
	(0.079)	(0.061)	(0.026)	(0.040)	(0.066)
x accent	0.075	−0.039	−0.001	−0.010	−0.027
	(0.064)	(0.048)	(0.017)	(0.024)	(0.049)
NW-EUR	−0.133	0.073	0.160^{+}	−0.061	−0.042
	(0.088)	(0.085)	(0.085)	(0.073)	(0.078)
x accent	0.106	0.036	−0.085	0.004	−0.035
	(0.161)	(0.135)	(0.062)	(0.071)	(0.078)
Other	−0.104	0.065	0.133**	−0.085*	−0.009
	(0.085)	(0.064)	(0.042)	(0.041)	(0.070)
x accent	0.018	−0.059	−0.019	0.014	0.046
	(0.064)	(0.050)	(0.018)	(0.025)	(0.060)
Number of observations	2241	2241	2241	2241	2241

Source: CILS4EU and CILS4EU-DE, O*NET, NEPS SC5; own calculations results design-weighted.
$^{+}p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A8. The role of accent in language-intensive Work/VET: full models (results from structural equation models applying FIML).

	M1	M2	M3	M4
Accent	−0.046*	−0.012	−0.068[+]	−0.035
	(0.023)	(0.024)	(0.036)	(0.033)
% own group in municipality		0.032		0.029
		(0.027)		(0.027)
x accent		−0.020		−0.019
		(0.013)		(0.012)
% own group in occupation			−0.044*	−0.041*
			(0.021)	(0.020)
x accent			0.013	0.012
			(0.013)	(0.012)
Parents' highest ISEI	−0.002	−0.002	−0.002	−0.002
	(0.001)	(0.001)	(0.001)	(0.001)
Parents' highest education (ref. university)				
No certificate	0.179	0.199	0.184	0.204
	(0.131)	(0.133)	(0.128)	(0.130)
Lower secondary degree	0.056	0.058	0.045	0.047
	(0.083)	(0.082)	(0.083)	(0.083)
Intermediate secondary degree	0.075	0.072	0.073	0.069
	(0.080)	(0.080)	(0.080)	(0.080)
Upper secondary degree	0.058	0.066	0.064	0.071
	(0.088)	(0.088)	(0.086)	(0.087)
Origin group (ref.: Turkey)				
Southern Europe	0.055	0.100	0.045	0.086
	(0.103)	(0.118)	(0.097)	(0.112)
Former Yugoslavian Republic	−0.000	0.025	−0.024	−0.000
	(0.124)	(0.136)	(0.124)	(0.136)
Former Soviet Union/Central and Eastern Europe	−0.035	0.009	−0.002	0.034
	(0.078)	(0.105)	(0.079)	(0.103)
Northern and Western Europe	0.106	0.143	0.080	0.115
	(0.116)	(0.131)	(0.114)	(0.128)
Other	0.045	0.092	0.045	0.086
	(0.101)	(0.133)	(0.096)	(0.131)
Migrant generation (ref.: 3rd generation)				
1st generation	0.049	0.027	0.024	0.005
	(0.099)	(0.099)	(0.096)	(0.096)
2nd generation	−0.066	−0.071	−0.086	−0.089
	(0.095)	(0.094)	(0.093)	(0.092)
German citizenship	−0.043	−0.043	−0.044	−0.044
	(0.066)	(0.067)	(0.064)	(0.065)
Year of birth (ref.: 1995)				
Before 1999	0.028	0.036	0.029	0.037
	(0.060)	(0.060)	(0.059)	(0.059)
After 1999	0.035	0.043	0.030	0.039
	(0.056)	(0.056)	(0.055)	(0.055)
Female	0.245***	0.242***	0.243***	0.241***
	(0.050)	(0.050)	(0.050)	(0.050)
Highest education (ref.: upper secondary)				
Lower secondary or none	0.152	0.145	0.177[+]	0.170[+]
	(0.097)	(0.098)	(0.092)	(0.093)
Intermediate secondary	−0.032	−0.028	−0.022	−0.019
	(0.068)	(0.069)	(0.068)	(0.069)
Upper secondary vocational	0.079	0.068	0.083	0.072
	(0.071)	(0.072)	(0.072)	(0.072)
Vocabulary test	−0.211	−0.187	−0.202	−0.178
	(0.227)	(0.224)	(0.218)	(0.216)
Cognitive test	0.295	0.317	0.306	0.327
	(0.204)	(0.205)	(0.200)	(0.201)
Vocational training	0.026	0.020	0.037	0.030
	(0.061)	(0.061)	(0.062)	(0.062)
Number of observations	684	684	684	684

Source: CILS4EU and CILS4EU-DE, O*NET, German microcensus (RDC of the Federal Statistical Office and Statistical Offices of the Federal States, Microcensus, Scientific Use Files, survey years 2012–2016), microm; own calculations results design-weighted.

[+]$p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A9. The role of accent for ISEI and income: full models (results from structural equation models applying FIML).

	ISEI		Income (log)	
	M1	M2	M3	M4
Accent	−0.791	−0.891	−0.014	−0.009
	(0.646)	(0.702)	(0.029)	(0.032)
Language is important for occupation	1.054	0.721	0.031	0.048
	(1.430)	(1.619)	(0.052)	(0.059)
x accent		0.647		−0.034
		(1.486)		(0.067)
Parents' highest ISEI	0.025	0.026	−0.001	−0.001
	(0.044)	(0.044)	(0.002)	(0.002)
Parents' highest education (ref. university)				
No certificate	1.247	1.133	0.008	0.016
	(3.193)	(3.195)	(0.106)	(0.109)
Lower secondary degree	−0.094	−0.086	−0.006	−0.007
	(2.128)	(2.122)	(0.063)	(0.063)
Intermediate secondary degree	0.166	0.188	0.018	0.017
	(2.127)	(2.119)	(0.049)	(0.049)
Upper secondary degree	−3.551	−3.528	−0.073	−0.074
	(2.182)	(2.178)	(0.086)	(0.086)
Origin group (ref.: Turkey)				
Southern Europe	−1.500	−1.299	0.071	0.061
	(2.956)	(3.013)	(0.062)	(0.063)
Former Yugoslavian Republic	2.990	3.005	0.061	0.057
	(2.765)	(2.792)	(0.076)	(0.077)
Former Soviet Union/Central and Eastern Europe	0.240	0.295	0.023	0.020
	(2.033)	(2.047)	(0.058)	(0.058)
Northern and Western Europe	−1.619	−1.514	0.095	0.090
	(3.106)	(3.118)	(0.080)	(0.079)
Other	3.059	3.146[+]	−0.059	−0.063
	(1.878)	(1.896)	(0.076)	(0.077)
Migrant generation (ref.: 3rd generation)				
1st generation	2.305	2.221	0.052	0.056
	(2.872)	(2.891)	(0.103)	(0.103)
2nd generation	2.815	2.716	0.060	0.064
	(2.569)	(2.578)	(0.087)	(0.087)
German citizenship	−1.692	−1.668	−0.047	−0.048
	(1.608)	(1.600)	(0.049)	(0.048)
Year of birth (ref.: 1995)				
Before 1999	−0.567	−0.632	−0.025	−0.022
	(1.822)	(1.815)	(0.054)	(0.055)
After 1999	−1.298	−1.277	−0.077[+]	−0.078[+]
	(1.530)	(1.530)	(0.042)	(0.042)
Female	4.626***	4.623***	−0.220***	−0.220***
	(1.346)	(1.346)	(0.054)	(0.054)
Highest education (ref.: upper secondary)				
Lower secondary or none	−20.097***	−20.069***	−0.374***	−0.374***
	(2.323)	(2.326)	(0.112)	(0.112)
Intermediate secondary	−12.535***	−12.521***	−0.008	−0.008
	(2.036)	(2.033)	(0.057)	(0.057)
Upper secondary vocational	−9.467***	−9.423***	0.007	0.005
	(2.048)	(2.052)	(0.048)	(0.048)
Vocabulary test	11.692*	11.587*	0.094	0.100
	(5.218)	(5.248)	(0.165)	(0.166)
Cognitive test	−0.724	−0.624	0.163	0.154
	(4.888)	(4.893)	(0.151)	(0.153)
Vocational training	−1.291	−1.288	−0.831***	−0.830***
	(2.053)	(2.047)	(0.067)	(0.067)
Number of observations	699	699	699	699

Source: CILS4EU and CILS4EU-DE, O*NET, own calculations results design-weighted. Observations: 699
[+]p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001