ORIGINAL RESEARCH

Language Used at Home and Educational–Occupational Mismatch of Migrants by Gender

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Abstract

The ability of migrants to use the host country's language is crucial to their integration. Nonetheless, the association between migrant literacy and their labor market outcome is less explored compared to the association between their educational attainment and their economic integration. Moreover, this ability has another vital role in immigrant assimilation, serving as an indicator of cultural capital. The current study, therefore, examines the extent to which language as cultural capital shapes gender differences in migrant economic integration, as measured by educational–occupational mismatch (EOM). Using the PIAAC 2018 dataset, we employ a series of nested fixed-effect linear models in which our dependent variable is years of over-education and study the effect of language use at home, controlling for linguistic competence in the host country language. We find that once controlling for educational level, migrant men who use a different language than the host country's language at home are not more prone to EOM. However, migrant women, who are at higher risk of EOM, suffer even more when using a foreign language at home. We suggest that using a foreign language at home for women might indicate low host-country-specific cultural capital, which could directly affect migrant women's integration into the labor market.

Keywords Overeducation · Migration · Cultural capital · Educational–occupational mismatch

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1 Introduction

Language proficiency and literacy are among the most critical factors influencing migrants' integration in their destination country, specially in the labor market (Auer, 2018; Bussi & Pareliussen, 2017; Dustmann & Fabbri, 2003). In recent years, results from the PIAAC (The Programme for the International Assessment of Adult Competencies), which include an assessment of adults' literacy levels, suggest that migrants have lower destination language literacy levels than natives. Nevertheless, we claim that the assessment of literacy competence provides only a partial understanding of language abilities in migrants' integration, due to the importance of language use as a form of embodied cultural capital that can be described as linguistic-cultural capital (Rodríguez-García et al., 2018). Even immigrants with a high level of literacy competence might suffer from a lack of cultural capital required to transform their education into a labor market position due to statistical discrimination, racism, or classism (Erel, 2010; Rivera, 2012). In addition, language use might serve as a proxy for social integration, which can affect labor market integration through social capital (Erel, 2010). Finally, when focusing on gender, language use at home can also proxy for gender norms related to the division of work within the households (Gay et al., 2018; Salari, 2020). In this study, we assess the effect of language use in the home on educational–occupational mismatch (henceforth EOM), an important aspect of labor market integration.

Compared to natives, immigrants have been found to suffer from higher levels of EOM, i.e., difficulty in obtaining occupational status that corresponds with their educational level (Chiswick & Miller, 2009b, 2010; Reitz, 2001). Most of the existing studies on educational–occupational mismatch focus on male immigrants (Chiswick & Miller, 2009b; Green & Kler, 2007) or use pooled samples of men and women (Aleksynska & Tritah, 2013; Cim et al., 2017; McGuinness & Byrne, 2015), ignoring gender-specific aspects that might shape female employment status and occupational attainment. Indeed, female immigrants have lower employment levels and are more likely to be employed in lower-status occupations than their male counterparts (Ballarino & Panichella, 2018; Raijman & Semyonov, 1997). Female immigrants are more likely to be tied migrants accompanying their husbands (Bielby & Bielby, 1992; Krieger, 2020; Mincer, 1978; Tenn, 2010). Therefore, they are more likely to compromise (in terms of their occupational status) to find employment (Ballarino & Panichella, 2018). Women tend to study and work in fields that are highly dependent on language proficiency (Hellerstein et al., 2008) and therefore need much better language skills than men to translate their education into appropriate jobs. Consequently, migrant women suffer a "double disadvantage" in the labor market due to the combined negative effect of their immigrant status and gender (Boyd, 1984; Donato et al., 2014; Greenman & Xie, 2008; Raijman & Semyonov, 1997).

This study, therefore, aims to examine to what extent language as cultural capital shapes gender and migration status differences in EOM. To assess this, we define linguistic-cultural capital as the language used at home, net of literacy abilities measured at the destination country and examine its effect on EOM by gender and migration status.

1.1 Language Used at Home and Labor Market Outcome by Gender

As stated earlier, language proficiency and literacy are among the most critical factors influencing migrants' integration at their destination country. Until recently, the association

between literacy and labor market outcome was not fully explored, due to a lack of data. Nonetheless, studies that used individual self-assessment of language abilities show that language proficiency and literacy substantially affect migrants' labor market performance (Chiswick & Miller, 1995; Dustmann & Fabbri, 2003). In recent years, results from the PIAAC data have been used to assess adults' literacy levels, showing that migrants have lower destination language literacy levels than natives (Batalova & Fix, 2015; Richwine, 2017), which hinders their integration into the labor markets in their destinations (Bussi & Pareliussen, 2017). For example, in Sweden, controlling for the language literacy of migrants eliminated the native-to-immigrants employment gap. In contrast, the over-education gap remains significant, arguing that it is more influential for occupational attainment (Bussi & Pareliussen, 2017). This implies that language proficiency has different effects at various stages of the labor market, from employment to occupational attainment and earning; further, occupations play an essential role in the allocation of employees to different labor markets based on their language abilities (Aldashev et al., 2009; Bussi & Pareliussen, 2017).

Prior studies reach inconclusive conclusions when looking at gender differences in the language proficiency of migrants. While most argue that men's proficiency exceeds that of women (Beiser & Hou, 2000; Bernhard & Bernhard, 2022; Hou & Beiser, 2006), some argue the opposite (Kristen et al., 2015), and sometimes there are no substantial differences (Chiswick et al., 2005b). Serval aspects were mentioned as possible causes for the gender disadvantage of women, including their family responsibility (Bernhard & Bernhard, 2022; Chiswick et al., 2005b), the gender division of work (Bernhard & Bernhard, 2022), lack of learning opportunities (Beiser & Hou, 2000), as well as their role as secondary migrants (Chiswick et al., 2005b). In Canada, it was suggested that over time gender gaps in language acquisition widen due to women's lower opportunity to learn the language (Beiser & Hou, 2000).

We claim that the assessment of literacy competence provides only a partial understanding of language abilities in migrants' integration, due to the importance of language use as a form of embodied cultural capital that can be described as linguistic-cultural capital (Rodríguez-García et al., 2018). Even immigrants with a high level of literacy competence might suffer from a lack of cultural capital required to transform their education into a labor market position (Erel, 2010; Rivera, 2012). In addition, language use might serve as a proxy for social integration (Erel, 2010). In this study, we argue that language use at home might have a separate effect from language abilities and literacy as it captures aspects related to the Bourdieusian notion of cultural capital. The language used at home might be related to what Bourdieu (1983) identified as cultural capital, which refers to schemes of thinking and behavior, language, value orientation, and competencies that individuals acquire through a long socialization and education process. In fact, even in cases in which the questionnaire contains information on the language spoken at home in addition to self-reported language abilities, most previous studies did not assess it as a distinct aspect of language abilities but rather merged it into one variable of language abilities or substituted it for that (Aldashev et al., 2009; Chiswick & Miller, 1995).

Furthermore, migrant families might maintain their origin cultures in several ways, and speaking their heritage language is one way to do so (Tsai et al., 2012). Nonetheless, heritage language is not only a means for the intergenerational preservation of culture but also an indicator of cultural assimilation (Salari, 2020). Recent studies suggest that heritage language can be used as an indicator of cultural traits related to the division of work in the family. It was found that second-generation migrant women who use their heritage language at home were less prone to participate in the labor market and work fewer hours

(Salari, 2020). Along the same line, speaking a language with gender-based grammatical roles was associated with lower labor market participation and working hours of migrant women (Gay et al., 2018). This suggests that language use at home can be a proxy for the maintenance of the heritage and gender norms of the division of work at home.

Overall, the studies presented here suggest that language use at home might have a separate effect than that of language proficiency related to the Bourdieusian notion of cultural capital, that migrant women might have lower levels of language proficiency, and language use at home can serve as a proxy for cultural aspects related to gender roles in the family. In line with these studies, language use at home might be relevant for other aspects of migrant integration into the labor market, such as EOM. Therefore, in this study, we assess the effect of language use at home, controlling for language abilities on educational–occupational mismatch, an essential aspect of labor market integration.

1.2 Gender Migration Intersectionality and Double Disadvantage

Both migration and feminist scholars documented the distinct position of migrant women using separate, albeit sometimes overlapping terms. The first is *"double disadvantage,"* which usually refers to labor market disadvantages migrant women have in comparison to both male migrants and native women. Studies within this framework found that in many countries, such as the U.S., Canada (Donato et al., 2014), Israel (Raijman & Semyonov, 1997), the Netherlands (Bevelander & Groeneveld, 2012) and Germany (Zaiceva, 2010), migrant women suffer from double disadvantages in the labor market compared to both native women and immigrant men. Among these disadvantages are lower chances of employment, fewer working hours, lower occupational prestige, and lower income. However, the magnitude and areas of double disadvantage differ between countries. For example, in Germany, most migrant women suffered from fewer working hours and lower income but not from lower chances of employment (Zaiceva, 2010). According to Donato et al. (2014) and Vidal-Coso (2018), most of the double disadvantage is explained by family structure. Marriage and children eliminate the direct effect of the double disadvantage of migrant women in both occupation and earnings in some countries. It was suggested that since migrant families tend to invest more in the husbands' labor force assimilation (Long, 1980; Mincer, 1978), married migrant women, especially with children, have fewer incentives to fully participate in the labor force, and thus are prone to suffer more from double disadvantage.

The second term is *intersectionality*, derived from the gender studies tradition and usually refers to the unique experience of disadvantaged subgroups (for example, women) within a minority or disadvantaged group. Following this tradition, immigrant women face different barriers but also opportunities than native women and immigrant men (Oso & Ribas-Mateos, 2013). Moreover, this tradition calls for examining the experience of migrant women in light of gender perceptions and family roles. For example, the assimilation of migrant women is channeled through their role in their family; gender perceptions from both the host and origin countries affect these roles. Due to uneven power relations within families, communities, and the country's national level, migrant women find themselves, in many cases, restricted to underpaid or unpaid care jobs (Herrera, 2013). In fact, several studies indicated that in some communities, migration and assimilation is not based on their own decision, but on prearrangement by marriage (Thai, 2007) or legal constraints (Salcido & Menjívar, 2012).

Both terms, therefore, emphasize the importance of migrant women as a distinct category that should be analyzed in comparison to both native women and migrant men. They highlight the importance of family structure in the study of migrant women and the relevancy of the national context in that comparison. In that sense, our study follows both traditions.

1.3 Immigration, Gender, and EOM

The higher levels of EOM of migrants are well documented in the literature (Aleksynska & Tritah, 2013; Chiswick & Miller, 2009b, 2010; Prokic-Breuer & McManus, 2016; Reitz, 2001; Visintin et al., 2015). Immigrants tend to have higher levels of EOM shortly after migration, but the levels of over-education tend to decline over the years in destinations as they accumulate more specific human capital (Chiswick & Miller, 2009a; Chiswick et al., 2005a). At the same time, the longer the duration at the destination, the more migrants tend to maintain higher probabilities of under-education, which is in line with immigrants being positively selected for occupational advancement on the less-than-perfect transferability of human capital acquired abroad (Chiswick & Miller, 2009b). In addition, EOM among immigrants varies substantially across destination countries (Aleksynska & Tritah, 2013; Nieto et al., 2015) and is related to the quality of education in immigrants' countries of origin, and to immigrants' self-selection patterns (Cim et al., 2017; Mattoo et al., 2008).

Regarding gender, some studies suggest that women have higher probabilities of being mismatched than men (Addison et al., 2020; Johansson & Katz, 2006), while others suggest the opposite (Castagnetti et al., 2018; Voon & Miller, 2005). In a meta-analysis of different measurements of occupational mismatch, it was found that women do not have higher levels of over-education but have lower levels of under-education relative to men (Groot & Maassen Van Den Brink, 2000).[1] In addition, it was found that having children and working in more flexible occupations are associated with an occupational mismatch, which are both aspects related to gender (Addison et al., 2020). Addison et al., (2020) argue that the higher tendency of women to suffer from EOM is related to traditional gender roles and household division of labor, showing that after childbearing, highly educated women trade flexibility for EOM.

Just a few studies have examined migrant women's EOM and found that migrant women tend to suffer from higher levels of occupational mismatch than men (Pecoraro, 2011). Migrants women with academic degrees are less likely to work in a job that requires academic education than male immigrants (Pecoraro, 2011), and the mean difference in occupational prestige scores between immigrants and natives is larger among women than among men (Ballarino & Panichella, 2018; Raijman & Semyonov, 1997).

As stated earlier, migrant women are more likely to be tied-migrants accompanying their husbands; therefore, they are more likely to compromise on occupational status in order to find employment (Ballarino & Panichella, 2018). Women, in general, tend to study and work in fields that are highly dependent on language proficiency (Lörz et al., 2011; Pinxten et al., 2014), and therefore migrant women might need much better language skills than men in order to translate their academic education into high-paying jobs (Elo et al., 2020). Moreover, gender occupational segregation among non-migrants might force women to crowd into a more limited number of occupations (Blau & Jusenius, 1976).

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[1] Similar results were found in Australia (Voon & Miller, 2005).

1.4 Educational–Occupational Mismatch Measurement and Implications

EOM[2] is defined as the degree to which an individual's education is higher (or lower) than the norm in an occupation where the same individual is employed. There are three main ways to measure the educational requirement of an occupation (or a job), shaping how vertical EOM is measured. The first two are usually described as objective measures, while the other is subjective (Capsada-Munsech, 2019).

1. *Normative/job analysis (JA) method-* In this form, professional job analysts identify the required level of education for each specific occupation and place the occupation in a requirement ranking (Flisi et al., 2017) such as the US Dictionary of Occupation Titles (DOT) and the Occupational Information Network (O*Net) (Capsada-Munsech, 2019). However, in our study, the problem with such a ranking is the international incomparability of the required years of education for the occupation (Capsada-Munsech, 2019).
2. *The realized matches approach (RM)* is the most well-known measurement of EOM in the case of migration (Bauer, 2002; Chiswick & Miller, 2009a, 2009b; Clogg & Shockey, 1984). This measure defines over/under-education based on the actual distribution of schooling years, or the educational levels of workers in each occupation. Individuals are defined as over-educated if their educational level is more than one standard deviation above the mean (Verdugo & Verdugo, 1989) or mode (Kiker et al., 1997) of individuals employed in that occupation. Hence, it can be easily estimated and adapted over cohorts and countries (Capsada-Munsech, 2019). The drawback is arbitrary decisions regarding the aggregation levels of occupation and the use of mode or means (Capsada-Munsech, 2019; Flisi et al., 2017). As in the JA, RM is based on occupations, not specific jobs (Capsada-Munsech, 2019).
3. The *subjective measure* relies on a worker's self-assessment of the required levels of education in their job. It draws on a survey asking the respondent what level of education is required to obtain the position (Duncan & Hoffman, 1981) or do their job (Hartog & Oosterbeek, 1988). This information is then compared with the actual educational levels of the individual. The main drawback is that subjective reports are vulnerable to measurement errors that might vary across respondents. One of the benefits is that this account is job specific, easy to assess, and up-to-date (Capsada-Munsech, 2019; Flisi et al., 2017). It was suggested that subjective indicators are more appropriate for comparative purposes and are crucial for exploring workers' assessments of their situation relative to their expectations, their co-workers, and the labor market in general. In this way, subjective measures offer a sociological perspective on over-education (Capsada-Munsech, 2019).

Empirical examination comparing across methods finds that subjective measures tend to show higher levels of over-education relative to JA and RM measures (Capsada-Munsech, 2019; Choi et al., 2019; Groot & Maassen Van Den Brink, 2000), while the economic returns on education do not differ much by the different measures (McGuinness, 2006). Therefore, we measure occupational education mismatch using individual subjective perception and the RM approach. While most studies looked at over-education as a binary outcome, we refer to over-education as a continuous variable. This variable is measured by

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[2] This paper discusses only vertical EOM.

subtracting an individual's years of education from what they argue is needed for their job. In so doing, we suggest that there can be different levels of over-education.

1.5 Expectations

Following the literature on EOM and migration, we expect to find higher levels of over-education among migrants relative to natives. However, we expect that at least part of the over-education can be explained by language use at home, due to the importance of language skills and cultural capital embedded in language use. Since both explanations play a substantive role in EOM formation, we expect to find a significant, albeit weaker, effect for language use at home even after controlling for language proficiency, meaning that there would be an effect for the performative role of language.

Regarding gender-migration intersectionality, we expect to find that migrant women suffer more from over-education due to language use at home for several reasons. First, women are more concentrated in jobs that require language proficiency than men (Lörz et al., 2011; Pinxten et al., 2014). Second, due to the type of their education and the role of feminized occupations, migrant women will experience higher levels of over-education than migrant men.[3] Third, past studies suggest that family has an important role in language acquisition and that the presence of children in the household is negatively associated with their mother's language proficiency, but not that of their fathers (Chiswick et al., 2005b). Lastly, as studies suggest that migrant women tend more to be tide movers in the decision to migrate (Bielby & Bielby, 1992; Krieger, 2020; Mincer, 1978; Tenn, 2010), they might struggle to acquire the host country's language, especially in terms of accent and other performative aspects of language acquisition. For example, in a study on language acquisition in Australia, within households, gender gaps in language abilities were explained by the gender of the principal applicant. In other words, as migrant men tend to be the principal applicant which, on average, have higher language abilities, wives tend more to have lower language abilities compared to their husbands (Chiswick et al., 2005b). In addition, Beiser and Hou (2000) suggest that the lower opportunity for women to learn the destination language is related to the labor market attachment.

2 Analytical Strategy

2.1 Data

We use *The Programme for the International Assessment of Adult Competencies* (PIAAC) dataset for the year 2018, which is an international comprehensive dataset that aims to assess skills among adults (Schleicher, 2008). As such, it contains information regarding literacy and numeracy skills, as well as information regarding the use of such skills at work. It also assesses the subjective perception regarding the education required for the respondent's job. Its background variables include information on education, age, immigration status, years living in the country, etc. Concerning migration, it includes questions

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[3] Using the PIAAC data, we can empirically assess the effect of communication requirements and the gender composition of occupation.

regarding whether migrants used the destination language at home as their primary means of communication, which is our main independent variable.

The dataset contains information from 35 countries and regions. We restricted the sample to native and first-generation migrants.[4] at their prime working age that were employed at the time of the survey. The sample includes over 133,000 observations when we looked at the objective measures of EOM, of which 7% are migrants in 27 countries for which we have sufficient data.[5] When we focus on the subjective measure of EOM, the numbers are reduced to over 69,000 individuals from 27 countries (from which migrants represent about 7.2%).

2.2 Methods

We employ a series of nested fixed effects (countries as units) linear models[6] in which our dependent variable is the perceived years of over-education at the job (Table 2) and a similar series in which the dependent variable is the difference between respondents' education and the mode of education in their occupation (Table 3).[7] In our base model (Model 1), we measure the effect of language at home and gender while controlling for individual characteristics (age, marital status, having children, and time since migration). We then account for the interaction between gender and language use at home (Model 2). Last, we control for literacy competence and education—each separately and together (Models 3 to 5).

Equation I: describes the full model:

$$EOM = a + b_1 Lang + b_2 Female + b_3 Lang \times Female + b \sum x$$

where *EOM* represents a subjective and objective measurement of educational–occupational mismatch; *Lang* represents whether the respondents used to speak a foreign language at home. Female is a dummy variable for gender, and $\sum X$ represents a set of control variables (age, education, place of education, family structure, and time in destination).

Following our expectations, our main interest is the coefficients of the *Lang* variable and its interaction with gender (*Lang × Female*), which enables us to assess whether migrants suffer from the additional penalty due to speaking a foreign language at home and whether this penalty is more substantial for migrant women relative to their men counterparts.

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[4] Unfortunately, the question of the language used at home was asked just for foreign-born individuals, implying that we could not assess the effect of language use at home for native or second-generation migrants in our study.

[5] The list of the countries is presented in Appendix 4 as well as the descriptives for each country. We were forced to omit seven countries (Austria, Canada, Hungary, New Zealand, Singapore, Ecuador, and the USA) due to lack of information on age and small numbers of migrants (less than 10 after weighting).

[6] As our unit of analysis is individual nested with in countries, we used host country fixed effects (26 dummies for 27 countries).

[7] Since it is impossible to compare years of education within occupation between countries, this variable, in contrast with the subjective EOM, cannot be expressed in years.

Table 1 Descriptive statistics of the individual included in the study by gender, migration status and sample

	Restricted sample—Subjective EOM				Full sample—Objective EOM			
	Immigrant		Native		Immigrant		Native	
	Male	Female	Male	Female	Male	Female	Male	Female
EOM[a]	1.13 (3.08)	1.62 (3.11)	0.32 (2.62)	0.54 (2.46)	0.41 (1.33)	0.63 (1.35)	0.14 (1.17)	0.27 (1.19)
Literacy competence	248.68 (56.14)	250.73 (52.58)	269.31 (50.57)	271.82 (47.46)	243.39 (57.60)	242.44 (56.20)	261.38 (53.16)	258.48 (52.69)
Language at home	0.69	0.65			0.66	0.65		
More than 5 years	82.96	83.06			83.71	82.00		
Less than 5 years	17.04	16.94			16.29	18.00		
BA	21.06	30.92	22.98	30.80	19.32	25.06	18.44	22.43
MA+	18.41	12.83	10.63	17.48	14.87	14.32	8.01	8.15
Education completed before migration	52.89	50.50			49.98	51.78		
AGE	40.72 (11.84)	40.67 (11.42)	39.05 (12.64)	39.23 (12.08)	41.15 (13.29)	40.66 (12.72)	38.96 (14.46)	39.17 (14.06)
Has kids	63.16	61.94	67.31	64.05	64.47	61.70	69.60	64.56
Living alone	18.81	26.43	28.21	31.82	23.06	27.47	34.92	35.38
Occupational characteristics								
Communication requirements in occupation	−0.04 (1.63)	−0.02 (1.72)	0.06 (1.68)	0.31 (1.60)	−0.12 (1.47)	−0.15 (1.44)	−0.14 (1.55)	0.04 (1.42)
Percent of female in occupation	37.04 (25.20)	64.31 (21.70)	33.90 (24.91)	64.31 (20.75)	36.46 (24.96)	64.94 (18.19)	39.92 (25.50)	64.61 (17.63)
% employed in masculine occupation [b]	49.42	7.82	41.82	7.45	29.67	4.49	36.47	4.66
% employed in neutral occupation [b]	41.24	49.28	48.02	47.65	62.87	70.48	56.85	70.38
% employed in feminine occupation [b]	9.35	42.90	10.16	44.91	7.46	25.04	6.68	24.96
N of cases	2488	2488	32,066	32,062	5260	4115	57,307	66,319

[a]for the restricted sample, the EOM measurement was subjective. for the full sample the EOM was objective

[b]Occupation masculinity—femininity is defined as follow: masculine occupation 0–30% women, neutral occupation 30–70% women, feminine occupation 70–100% women

2.3 Variables

2.3.1 Dependent Variables

– *Subjective educational–occupational mismatch*—To assess subjective EOM, we employed the indirect self-assessment (ISA) method (Verhaest & Omey, 2006). The variable is the subtraction of two questions in which individuals compare their years of education relative to the required education in their job (based on their perception). As such, zero represents no educational–occupational mismatch, while positive values represent over-education (the respondent's education is higher than the perceived edu-

cation required for the job), and negative values represent under-education. For example, a value of five means that the respondent believes they have five more years of education than what is required for the job they are holding. Nonetheless, it does not represent an objective measure of occupational mismatch, implying that we cannot disentangle the effect across groups' differences in perceptions of their own education or the levels required to do the job. The benefit of this method is that it results in a linear variable of over-education and that, theoretically, self-perception of occupational mismatch is expected to have negative effects on numerous life outcomes. Unfortunately, we do not have information for all individuals on this variable, and we refer to the sample in which we use the subjective EOM as the restricted sample (see Table 1).

– *Objective educational–occupational mismatch—*This measure is calculated on individuals' education compared to the mode of education in their occupation for their country of residence. Education is measured for the individual and the occupational level based on ISCED categories, and occupations are categorized using the ISCO 2008 two-digit schema. Objective EOM, therefore, is defined as the difference between the individuals' education and the mode of education of their occupation (as in the subjective measure here, two positive values represent over-education while negative values represent under-education). We used this second variable as validation of our results of the analysis for the subjective measure, as almost all individuals have information on this variable (see Table 1—the full sample).

2.3.2 Independent Variables

The language used at home—Migrants were asked whether they used the destination language at home as their primary means of communication. We used this question as our primary variable of interest. This is a dummy variable where zero represents using the destination language, and one represents a foreign language. This variable aimed to assess the extent to which individuals are linguistically assimilated at their destination, net of language proficiency. It assesses language as cultural capital, whether positive or negative, in relation to the labor market. That is the performative aspect of language, such as foreign accents, colloquial language, and grammar mistakes, which might be common among infrequent language users, as signs of negative cultural capital.

Literacy Competence—These scores are taken from the PIAAC literacy test ranging from 0 to 500 with an average of 252. Including this measure in our models enable us to assess the effect of language use at home, net from the measured destination language literacy. In other words, our primary variable, language used at home, measures the clean effect of the culture, net on the migrants' ability to use the destination language.

As we are interested in gender and language use at home, we include gender (female = 1) in the models and its interaction term. To capture assimilation, we included time in the destination for migrants using a series of two dummies (less than five years and more than five years in the destination).[8]

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[8] The effect of immigrant status is included in individuals that are less than five years in their destination. Considering that the number of immigrants that arrived in the year of the survey is minimal, including the main effect of immigrant status separately would bias our results.

We incorporated information on the highest education achieved as EOM is conditional on educational level (in three categories; less than tertiary, the omitted category, BA or equivalent, and MA or above). Considering that education acquired abroad is less transferable to the labor market of the destination (Kanas & Van Tubergen, 2009; Lancee & Bol, 2017), we included in the model an indicator of whether the last level of education was achieved before migration. Additionally, we controlled for individuals' age and family structure (whether the respondent is single and whether they have kids).

Finally, as a sensitivity analysis, we included in our model's information on the occupational characteristics in which individuals are employed. Specifically, as we argue that gender differences in occupational distribution might crowd women into a smaller number of occupations, we included in our model a series of three dummies of the percent of women in the occupation (less than 30% women, 30–70% women which is the omitted category, and over 70% women). In a second model, we also included the percentage of women in the occupation. In addition, we included in the models an indicator of the extent of communication requirements in occupation. We expect that controlling for this aspect will reduce the effect of foreign language use at home.[9]

3 Results

3.1 Descriptive Statistics

Table 1 present the descriptive statistics of the individual included in the study by gender, migration status, and sample (for objective EOM, look at the full sample, and for subjective EOM for the restricted sample). In line with our expectations, both gender and migration status differences are evident. Migrant women tend to have the highest levels of objective and subjective occupational education mismatch, followed by migrant men and native women, while native men have the lowest levels of EOM. In terms of language use at home among migrants, there are no substantial gender differences in the share of men and women that use a foreign language as their daily communication means at home (about 69 to 65%). As expected, natives have higher literacy levels, while there are no large differences by gender, both among natives and migrants. Appendix 2 presents the literacy level by language use at home among migrants and shows that migrants who use the destination language at home have better language proficiency. The vast majority (over 82%) of migrants in both samples have been living in their country for more than five years. This is in line with the requirements of the PIAAC questionnaire to conduct the evaluation of the literacy test in the native language.[10]

When assessing the educational levels for the full sample, the share of individuals with BA is highest among migrant women, followed by native women, migrant men, and finally, native men (almost the same pattern is evident for the restricted sample). However, the result differs somewhat in terms of MA education, so the share of migrants with at least a master's degree is substantially higher than natives when looking at the full sample.

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[9] These sensitivity analyses are presented in Appendix 1 and 2.

[10] Note that the implication of the requirement is that the overall sample of migrants that take part in the PIACC are probably those with better language abilities relative to the overall migrant population.

Table 2 OLS estimators of subjective EOM (country fixed-effects)

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Foreign language at home	0.432***	0.233**	0.007	0.328***	−0.031
	(0.094)	(0.108)	(0.102)	(0.103)	(0.102)
Female	0.212***	0.198***	0.120***	0.200***	0.116***
	(0.021)	(0.021)	(0.020)	(0.021)	(0.021)
Female X Foreign language		0.430***	0.452***	0.413***	0.462***
		(0.115)	(0.112)	(0.115)	(0.112)
BA			1.166***		1.211***
			(0.023)		(0.024)
MA+			1.357***		1.428***
			(0.038)		(0.039)
Education at origin country			1.207***		1.189***
			(0.090)		(0.090)
More than five years in country	0.462***	0.419***	0.047	0.509***	0.005
	(0.071)	(0.127)	(0.077)	(0.071)	(0.074)
Up to five years in country	1.265***	1.201***	0.339***	1.340***	0.246**
	(0.113)	(0.166)	(0.128)	(0.113)	(0.124)
Literacy competence				0.003***	−0.502***
				(0.000)	(0.007)
Constant	1.147***	1.153***	0.617***	0.127	1.125***
	(0.117)	(0.117)	(0.115)	(0.138)	(0.137)
Observations	69,104	69,104	69,104	69,104	69,104
R-squared	0.048	0.051	0.094	0.051	0.094
Number of countries	27	27	27	27	27

Individual age 25–65 that are employed, all models control for, age, having children, and having a partner. Standard errors in parentheses, ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

Note that 50 to 53% of migrants completed their highest education abroad (e.g., before migrating).

Considering that occupational characteristics might explain some of the gender and language use effects on over-education, we now focus on them. As expected, natives tend to work in occupations requiring higher communication levels than migrants. Specifically, the mean levels of communication requirements are the highest for native women, which is in line with our anticipation (note that this effect is more evident in the restricted sample). There are no evident differences in the distribution of men and women across occupations by migration status, so migrant women are not more overrepresented in feminine occupations than native women.

3.2 Language Use at Home and Subjective EOM

Table 2 presents the results from a series of nested fixed effects (countries as units) linear models in which the dependent variable is the perceived years of educational mismatch at the job (subjective EOM). Model 1 includes language used at home, gender, years in the destination, whether the respondent has children and is single, and his age. This model shows the indirect effect of the language used at home on subjective occupational educational mismatch—without controls for education and the actual language skills. As it is clearly seen there is a positive effect for the language used at home, indicating that the use

of a foreign language is associated with a higher subjective EOM. Women generally have a higher tendency to experience subjective EOM regardless of their migration status. In addition, there is a clear pattern of assimilation, so individuals who lived less than five years in their destination have higher levels of EOM compared to those who have lived there longer.

Following our expectation regarding the gender differences on the effect of language as a cultural capital, the interactive effect between genders and using a foreign language at home is added in model 2, which is significant and positive. Considering that both the main effects of gender and language use are also positive and significant, we can claim that migrant women who use a foreign language at home suffer from an additional penalty in subjective EOM relative to migrant men and to individuals (men and women) who use their native language at home. This is in line with our expectation regarding the double disadvantage of migrant women in the labor market, suggesting that migrant women suffer from an additional penalty for foreign language use at home relative to men; this broadens our perspective on the different mechanisms in which the double disadvantage is manifested.

Model 3 further assesses whether the effect of foreign language use at home and its interaction with gender remains significant when controlling for educational level and the place in which the highest educational level was acquired. As can be seen, both BA and MA + degrees increase the educational–occupational mismatch, as the possibility to experience it is dependent on having relevant education.[11] However, while the effect of foreign language lost its significance, the effect of gender and its interaction with language use remained positive and significant. Hence, the penalty for women who are foreign language users in terms of EOM is substantial, even when considering education. Moreover, finishing the highest educational level in the country of origin is also associated with higher levels of subjective EOM. Nonetheless, acquiring education abroad cannot eliminate the gender gaps in the effect of language use at home on subjective EOM.

In model 4, we replaced formal education with literacy competence to assess if our measure of language use at home remained significant when controlling for individuals' competence in the destination language. Model 4 clearly shows that even when controlling for individuals' literacy competence, using a foreign language at home is associated with a higher tendency of over-education. Since literacy competence is associated with formal education, its effect on educational–occupational mismatch is positive, which is similar to the formal education effect in model 3. However, when we control for both formal education and literacy competence, as presented in model 5, its effect is negative, suggesting that literacy competence acquired through formal education can help reduce the educational–occupational mismatch. Similar to model 3, in this model, the effect of language use for men is not significant (at the 0.1 level), implying that language use among men increases EOM only through education. However, the gender-language interaction is even somewhat stronger in model 5 compared to all the other models in which we estimated the interaction terms. This might strengthen the claim that immigrant women suffer from EOM, not due to their lack of language skills but due to the social stratification related to other cultural capital such as accent (Labov, 1966) or to gender norms and division of the work within families (Gay et al., 2018; Salari, 2020).

Appendix 1 presents the result from a modal similar to model 5, in which we also controlled for occupational characteristics to assess to what extent the effect of language at home on EOM depends on the type of occupation. Starting with controlling for feminine vs.

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[11] Adding educational levels to the models also significantly increases the R square of the models.

Table 3 OLS estimators of objective EOM (country fixed-effects)

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Foreign language at home	0.090*** (0.030)	0.065* (0.034)	0.045 (0.029)	0.169*** (0.034)	0.037 (0.029)
Female	0.135*** (0.006)	0.133*** (0.006)	0.114*** (0.005)	0.141*** (0.006)	0.114*** (0.005)
Female X Foreign language		0.087** (0.037)	0.065** (0.031)	0.086** (0.037)	0.064** (0.031)
BA			1.392*** (0.007)		1.403*** (0.007)
MA+			1.645*** (0.012)		1.662*** (0.012)
Education at origin country			0.257*** (0.024)		0.254*** (0.024)
More than five years in country	0.079* (0.041)	0.156*** (0.022)	0.048** (0.021)	0.200*** (0.022)	0.044** (0.021)
Up to five years in country	0.359*** (0.166)	0.442*** (0.037)	0.184*** (0.035)	0.544*** (0.036)	0.176*** (0.035)
Literacy competence				0.004*** (0.000)	−0.001*** (0.000)
Constant	0.156*** (0.039)	0.157*** (0.039)	−0.390*** (0.033)	−1.321*** (0.047)	−0.281*** (0.038)
Observations	133,001	133,001	133,001	133,001	133,001
R-squared	0.030	0.030	0.315	0.058	0.315
Number of countries	27	27	27	27	27

Individual age 25–65 that are employed, all models control for, age, having children, and having a partner. Standard errors in parentheses, ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

masculine occupation, we can see that when including dummies for masculine vs. feminine occupation (model 1) and when controlling for the share of women in the occupation (model 2), the effect of the interaction of gender and language use at home on subjective EOM remain positive and significant. This suggests that the concentration of migrant women in feminine occupations is not the mechanism that explains the disadvantage of migrant women when using their foreign language. However, as expected, controlling for the communication requirements of occupations, the effect of the interaction terms of gender and language use at home is reduced substantially. Hence, the gender differences in communication skills requirements mediate the gender differences in the effect of language use at home on the EOM.

3.3 Language Use at Home and Objective EOM

The interesting gender differences in the effect of language use at home on perceived occupational education mismatch call into question whether they are related to gender differences in perception, or objective differences in the extent of EOM. To assess the potential effect of perception, we present the same models using the objective EOM measurement as a robustness test for our findings in Table 3. Table 3 presents the results of identical models to the models presented in Table 2 except for the dependent variable, which is now the

objective EOM.[12] In general, the results are similar in sign and significance. For example, when looking at model 5, it can be seen that women tend to be more over-educated relative to men, while the effect of language use at home for migrant men does not reach statistical significance (once we control for education level and place of education), and the interaction term is positive and significant. This suggests that the tendency of migrant women who use a foreign language at home to be over-educated is not merely a result of differences in their perceptions but also an objective phenomenon. Appendix 2 contains models which also controlled for occupational characteristics. Models 1 and 2 show that the gender distribution across occupations does not affect the interaction between gender and language use at home. However, when controlling for language requirements in the occupation, the interaction of language use and home loss its significance, implying that communication skill in occupation fully mediates the interaction effect.

4 Discussion and Conclusion

EOM, and especially over-education among migrants is one of the important types of evidence for understanding assimilation difficulties for immigrants (Chiswick & Miller, 2009b; Green & Kler, 2007). Highly-skilled migrants find themselves employed in lower-skilled jobs that have implications on their income (Van Der Velden & Bijlsma, 2019), life satisfaction (Bracke et al., 2013), and even intergenerational mobility (Capsada-Munsech, 2020). In that regard, EOM can be seen as a skill wastage related to other forms of social stratification and as a disadvantageous form of employment (Capsada-Munsech, 2017). Studies of EOM tend to focus on language skills as a facilitator to overcoming over-education. However, studies of language use among migrants pointed out that besides language proficiency, language also has a performative aspect as part of the individual cultural capital (Erel, 2010; Rivera, 2012; Rodríguez-García et al., 2018). As such, the use of a foreign language at home affects both language proficiency and performance. In addition, recent studies that look at heritage language use at home suggest that this can be used as a proxy for cultural assimilation related to norms of the division of work within families (Gay et al., 2018; Salari, 2020).

In this study, we examine the effect of foreign language use at home, net of language proficiency on EOM. We found that, in general, women are more prone to suffer from over-education relative to men, which is in line with other studies (Addison et al., 2020; Johansson & Katz, 2006). Similarly, migrants show higher levels of EOM shortly after migration and slowly assimilate, although, in most models, the disadvantage remains even longer. At the same time, the effect of foreign language use is primarily positive (losing somewhat significant levels when educational level and language proficiency are controlled), suggesting that speaking a foreign language is associated with higher levels of EOM. However, most importantly, we found that, at least among women, the use of foreign language increases the EOM of migrant women. These results imply that language use has both skill and performative aspects for women, increasing their double disadvantage as migrants and as women.

The importance of the performative aspect of foreign language highlights linguistic capital as a form of cultural capital which is often ignored. This form of cultural resource is unique, as it can be easily distinguished from its accompanied skill, making it less prone to

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[12] It should be noted that our sample is substantially larger when using the objective EOM, due to the large number of individuals with missing information on the subjective measure of EOM.

the common criticism of Bourdieu's work (Goldthorpe, 2007) which claim that other forms of embodied cultural capital are merely a proxy for academic skills. The importance of the performative aspect of language use calls for an in-depth analysis, aiming to understand which languages form a higher deficit in cultural capital in which countries.

The gender disadvantage might be both a result of the performatives aspect related to language use as cultural capital, such as accent and other aspects of language acquisition (Erel, 2010; Rivera, 2012; Rodríguez-García et al., 2018), but also related to cultural norms shaping decision within the household on the division of work and working hours (Gay et al., 2018; Salari, 2020). In other words, the fact that migrant women suffer more than migrant men when using a foreign language at home might be due to the visible (or to say hearable) aspect of their language but might also be related to cultural gender norms of their role within the households. Specifically, heritage language use at home was associated with migrant women's labor force participation and working hours (Gay et al., 2018; Salari, 2020). In that regard, by looking at EOM, which is usually a less discussed aspect of the double disadvantage that migrant women are experiencing, we are expanding our understanding of the mechanism of double disadvantage and we hope that more scholars turn their focus on this aspect. Moreover, gender sensitive labor market assimilation policies usually focus on labor market participation as their measurement of success and tend to neglect the skill wastage among migrant women. Our results suggest that policy makers should also consider EOM as a relevant measurement of assimilation.

In addition, our study demonstrated the validity and reliability of subjective measurements of EOM. The results of the subjective measurement are very similar to the objective ones. This is even more important in light of our gender differences in EOM as it clearly illustrates that the observed differences in EOM are not merely a result of gender dissimilarity in self-perception of competence, but also have an objective aspect. Overall, this study adds to the growing tradition of exploring subjective measurements of inequality (Bar-Haim, 2018; Gugushvili, 2020; Kim, 2020).

This paper does not aim at establishing the direction of the causality between language use at home and occupational attainment, we can expect that labor market integration will also facilitate language acquisition. For example, previous studies suggest that the effect of language acquisition and labor force participation is reciprocal; women who were not part of the labor market were less likely to have better language proficiency relative to employed women, whereas low language proficiency was associated with lower labor market participation (Beiser & Hou, 2000). Therefore, we can expect that the usage of a foreign language is reduced as migrants integrate more into the host country's labor market and in occupations that match their abilities.

Overall, this study should be considered as a first step toward developing a better understanding of the role that language use plays in EOM. There is a need for further data on different aspects of language use, especially accent and language hierarchy. Moreover, while our cross-country design has benefits in terms of sample size and compatibility, it prevented us from doing a thorough examination within countries to understand whether EOM is limited to specific types of occupations or even specific types of immigrants. Such analysis is greatly needed in order to fully understand EOM in the context of migration.

Appendix 1

See Table 4.

Table 4 OLS estimators of subjective EOM (country fixed-effects), controlling for occupational characteristics

Variables	EOM levels by, gender of occupation, categorical	EOM levels by, gender of occupation, linear	EOM levels by, communication requirement in the occupation
	Model 1	Model 2	Model 3
Foreign language at home	−0.027 (0.102)	−0.030 (0.102)	−0.093 (0.098)
Female	0.167*** (0.024)	0.227*** (0.024)	0.146*** (0.020)
Female X Foreign language	0.454*** (0.112)	0.466*** (0.112)	0.337*** (0.108)
BA	1.227*** (0.025)	1.233*** (0.025)	1.918*** (0.025)
MA +	1.460*** (0.040)	1.441*** (0.039)	2.397*** (0.040)
Education at origin country	1.183*** (0.090)	1.194*** (0.090)	0.959*** (0.087)
More than five years in country	0.033 (0.077)	0.035 (0.077)	0.005 (0.074)
Up to five years in country	0.313** (0.128)	0.317** (0.128)	0.246** (0.124)
Literacy competence	−0.002*** (0.000)	−0.002*** (0.000)	0.002*** (0.000)
Occupational characteristics			
% employed in masculine occupation [a]	0.203*** (0.026)		
% employed in feminine occupation [a]	0.093*** (0.026)		
Proportion of women in occupation		−0.351*** (0.041)	

Table 4 (continued)

Variables	EOM levels by, gender of occupation, categorical	EOM levels by, gender of occupation, linear	EOM levels by, communication requirement in the occupation
	Model 1	Model 2	Model 3
Spoken language skills required in occupation			
			−0.502***
			(0.007)
Constant	0.935***	1.190***	−0.381***
	(0.138)	(0.137)	(0.133)
Observations	69,104	69,104	69,104
R-squared	0.095	0.095	0.163
Number of countries	27	27	27

Individual age 25–65 that are employed, all models control for, age, having children, and having a partner. Standard errors in parentheses, ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

[a] Occupation masculinity—femininity is defined as follow: masculine occupation 0–30% women, neutral occupation 30–70% women (omitted category), feminine occupation 70–100% women

Appendix 2

See Table 5.

Table 5 OLS estimators objective EOM (country fixed-effects), controlling for occupational characteristics

Variables	EOM levels by, gender of occupation, categorical	EOM levels by, gender of occupation, linear	EOM levels by, communication requirement in the occupation
	Model 1	Model 2	Model 3
Foreign language at home	0.027 (0.029)	0.037 (0.029)	−0.013 (0.024)
Female	0.139*** (0.006)	0.106*** (0.006)	0.074*** (0.004)
Female X Foreign language	0.080** (0.031)	0.065** (0.031)	0.025 (0.026)
BA	1.431*** (0.007)	1.402*** (0.007)	1.914*** (0.006)
MA+	1.659*** (0.012)	1.662*** (0.012)	2.461*** (0.011)
Education at origin country	0.282*** (0.024)	0.255*** (0.024)	0.101*** (0.020)
More than five years in country	0.040* (0.021)	0.044** (0.021)	0.038** (0.017)
Up to five years in country	0.162*** (0.035)	0.175*** (0.035)	0.110*** (0.029)
Literacy competence	−0.000*** (0.000)	−0.000*** (0.000)	0.002*** (0.000)
Occupational characteristics			
% employed in masculine occupation [a]	−0.126*** (0.007)		

Table 5 (continued)

Variables	EOM levels by, gender of occupation, categorical	EOM levels by, gender of occupation, linear	EOM levels by, communication requirement in the occupation
	Model 1	Model 2	Model 3
% employed in feminine occupation [a]	−0.408*** (0.007)		
Proportion of women in occupation		0.029** (0.012)	
Spoken language skills required in occupation			−0.429*** (0.002)
Constant	−0.175*** (0.038)	−0.291*** (0.038)	−1.142*** (0.032)
Observations	133,001	133,001	133,001
R-squared	0.331	0.315	0.535
Number of countries	27	27	27

Individual age 25–65 that are employed, all models control for, age, having children, and having a partner. Standard errors in parentheses, ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

[a]Occupation masculinity—femininity is defined as follow: masculine occupation 0–30% women, neutral occupation 30–70% women (omitted category), feminine occupation 70–100% women

Appendix 3

See Table 6.

Table 6 Descriptive statistics (percent, mean, and SD) of language use and literacy competence

		Foreign language at home	Host country language at home	t
		Percent		
Male		62.73	37.27	
		Literacy competence		
		233.88	244.99	6.01**
		(57.76)	(52.51)	
N		2727	1388	
Female		Percent		
		62.85	37.15	
		Literacy competence		
		231.44	243.18	7.264**
		(58.46)	(50.14)	
N		3444	1816	

Appendix 4

See Table 7.

Table 7 Objective EOM, subjective EOM and sample sizes by countries and immigration status

	Subjective				Objective			
	Native	Immigrants	N	% Immigrants	Native	Immigrants	N	% Immigrants
BEL	0.21	0.22	2493	5.78	0.28	1.78	4189	6.71
CHL	0.08	0.43	2348	2.51	0.17	0.88	4607	2.21
CYP	0.17	0.48	2046	9.19	−0.01	1.16	3635	8.31
CZE	−0.01	0.15	2334	2.53	0.65	1.19	4650	2.82
DNK	0.08	0.46	4041	18.71	0.44	1.60	5914	21.39
ESP	0.41	0.58	2545	11.87	0.81	2.12	5495	12.45
EST	0.71	1.09	3282	13.10	0.56	1.29	5184	14.26
FIN	0.83	0.85	2676	1.53	0.19	1.00	4154	1.61
FRA	0.19	0.22	2905	10.64	0.03	0.08	5128	12.46
GBR	0.14	0.84	3454	10.45	0.45	1.07	6098	10.68
GRC	0.14	0.29	1266	7.19	0.48	2.01	3936	6.78
IRL	0.36	0.94	2409	18.02	0.54	1.79	4562	17.51
ISR	0.22	0.62	1887	32.01	2.14	2.30	3341	27.18
ITA	0.19	0.34	1808	8.79	−0.36	2.92	3743	7.03
JPN	0.20	−0.29	3118	0.13	1.02	0.75	4685	0.15
KAZ	−0.08	−0.23	1664	4.39	0.50	0.29	3527	5.02
KOR	0.26	0.33	2825	0.85	0.75	3.29	5792	0.79
LTU	0.19	0.53	2052	2.39	0.82	0.90	3457	2.20
MEX	0.30	1.57	1844	0.11	−0.04	5.50	5701	0.12
NLD	0.11	0.43	2875	7.03	−0.11	0.80	4182	8.80
NOR	0.24	0.72	3005	12.28	0.48	1.33	3948	12.51
PER	−0.10	0.42	2565	0.35	0.68	0.89	6602	0.36
POL	0.08	0.40	4049	0.02	0.67	5.00	8540	0.06
SVK	0.23	0.40	2513	1.35	0.92	0.74	5100	1.33
SVN	−0.01	−0.16	2231	10.62	0.16	0.19	4385	10.29
SWE	0.06	0.49	2170	15.48	−0.29	0.46	3156	17.90
TUR	0.40	0.69	1662	0.18	0.24	3.33	4687	0.34

Declarations

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