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Self-Concept in Immigrant School Children and the Impact of Length of Residence: Evidence from PISA 2015 for Current Educational Practice

Sandra Figueiredo*[1], João Marôco[2], Margarida Alves Martins[3] and Odete Nunes[4]

∾   Comparative analyses of the Programme for International Student Assessment between immigrant and native students place immigrant students in an unfavourable position in schools, with disadvantageous indicators regarding socioeconomic and professional paths. However, the Programme for International Student Assessment assesses a series of dimensions that involve constructs that have been little studied in the school immigrant population and that relate to self-concept and school adjustment. Based on the Programme for International Student Assessment's most recent edition, Portugal's database of 7,325 15-year-old students was analysed. We selected 438 immigrant cases with two objectives: (1) to evaluate the impact of the length of exposure in the host country on three dependent variables of school adjustment: sense of belonging, perceived loneliness and attitudes towards school (expectations of educational and professional opportunities); (2) to evaluate the differences in results for the same dependent variables, but considering the first and second generation of immigrants in Portugal. For the data analysis, sampling weights and plausible values were analysed with the International Database Analyzer. The results show that students who have been in the country for a year or less have greater difficulties and increased significant differences compared to other migrant groups in the referred indices of self-concept and inclusion. However, other groups, especially those with periods of long-term residence between four and five years, also face substantial levels of school maladjustment.

Keywords: PISA assessment, immigrants, generations, self-concept, length of residence, school adjustment, sense of belonging

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Samopodoba otrok priseljencev in vpliv dolžine prebivanja: podatki PISA 2015 o trenutni izobraževalni praksi

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∽   Primerjalne analize *Programa mednarodne primerjave dosežkov učen-cev* (angl. *Programme for International Student Assessment*) med prise-ljenskimi in domačimi učenci uvrščajo otroke priseljence v neprijeten položaj v šolah, in sicer z neugodnimi indikatorji glede družbenoeko-nomskih in poklicnih poti. *Program za mednarodne primerjave dosežkov učencev* pa ocenjuje število razsežnosti, ki vključujejo konstrukte, ki so bili pomanjkljivo preučeni v šolski priseljenski populaciji in ki zadevajo samopodobo ter prilagoditev na šolo. Na podlagi najnovejših podatkov *Programa za mednarodne primerjave dosežkov učencev* je bila analizirana portugalska podatkovna zbirka 7.325 15-letnih učencev. Izbrali smo 438 primerov priseljencev z dvema ciljema: 1) da ocenimo vpliv dolžine iz-postavljenosti v državi gostiteljici na tri odvisne spremenljivke prilagaja-nja na šolo, tj. na občutek pripadnosti, zaznavo osamljenosti in na odnos do šole (pričakovanja glede izobraževalnih in poklicnih priložnosti); 2) da ocenimo razlike v rezultatih za iste odvisne spremenljivke ter pri tem upoštevajoč prvo in drugo generacijo priseljencev na Portugalskem. Za analizo podatkov smo z *Mednarodnim analizatorjem podatkovnih zbirk* (angl. *International Database Analyzer*) utežili podatke glede na velikost vzorca in analizirali verjetne vrednosti. Rezultati kažejo, da imajo učen-ci, ki so bili v državi leto ali manj, večje težave, obenem pri njih prihaja do izrazitejših pomembnih razlik v primerjavi z drugimi priseljenskimi skupinami glede na omenjene kazalnike samopodobe in inkluzije, ven-dar pa se te druge skupine, zlasti tiste z obdobji dolgotrajnega prebivanja med štirimi in petimi leti, vseeno spoprijemajo z občutno stopnjo nepri-lagojenosti na šolo.

Ključne besede: PISA ocenjevanje, priseljenci, generacije, samopodoba, dolžina prebivanja, prilagojenost na šolo, občutek pripadnosti

Introduction

The performance of immigrant students has been little studied in the context of the Programme for International Student Assessment (PISA) of the Organisation for Economic Cooperation and Development (OECD). One of the goals of PISA is the comparative analysis of the performance of 15-year-olds from different countries (OECD, 2016) in three domains: reading, mathematics and science. At triennial intervals, this international research allows a presentation of indicators of the evolution of the literacy of students from more than 70 countries (OECD, 2016). The analysis predicts the academic and professional success of student generations as they approach the end of compulsory schooling. According to the most recent database, in 2015, PISA was deployed in 72 countries and economies.

In addition to assessing academic content, PISA tests are comprehensive in that they allow us to examine other variables that have been neglected in comparative scientific analyses of students' PISA performance, especially immigrant populations. These variables are mainly related to the conditions of the host countries; specifically, the schools and teaching methods perceived by the migrant students. Self-concept, school adjustment and students' expectations regarding their performance and professional future in the country in which they are living are crucial. There is also a need to consider covariates such as the students' country of origin, languages spoken at home, mother tongue (L1), and the generation of immigration to which they belong (first or second). All of these variables appear in the OECD database and the 2016 report (OECD, 2016).

Based on previous PISA assessments, studies such as that by Cummins (2008) have reflected on the impact of the L1 variable on immigrant outcomes. These studies have concluded that proficiency in L1 is an important factor to consider in schools (valuing students' learning at home and on a continuous basis) and is associated with better performance, rather than total immersion in the second language (L2) (Agirdag & Vanlaar, 2018). One of the main concerns, especially for cases like the Portuguese, has been the performance in reading.

More recent PISA-based studies have focused on the immigrant population and its importance for the variability of general results by country, that is, how to differentiate native students and immigrant students in the same tests. The latest OECD (2016) and Factbook (2016) reports show more optimistic averages (above the OECD performance average) than previous PISA studies for immigrants in specific areas of problem solving, mathematics and reading. However, these results have mostly placed migrant minority students in lower performance positions (Hippe & Jakubowski, 2018).

The evidence has associated the low performance of immigrant adolescent students with the unfavourable socioeconomic contexts of their families, the school environment (as perceived by non-native students) and low expectations of school and professional success, especially job prospects after completing compulsory schooling (Hippe & Jakubowski, 2018). The same authors also found that from 2006 until the last PISA tests (2015), the differences between migrant and non-migrant groups in a considerable number of European Union countries remained significant, with immigrant students being in a disadvantaged position. The most predictive variation was according to the host country.

Other dependent variables have arisen, such as the language spoken at home and expectations that incorporate self-concept (such as the sense of belonging to the school). Another study by Marôco et al. (2016) found that socioeconomic status did not explain the differences between immigrant students (from the second generation) and non-migrant students, with immigrant students being better positioned than their native peers. On the other hand, immigrant populations have interested researchers in the fields of psychology and education (and economics) because of the difference in their performance between generations. Generations are identified as first (born in another country) and second (descendants of the first generation, born in the host country) taking into account variations in school policies in the host countries (Cattaneo & Wolter, 2015; Volante et al., 2019).

On the one hand, studies reveal that the latest generation has shown improvements in results since the last two PISA studies due to the new welcoming and preparation measures adopted by European Union (EU) and non-EU countries to promote the inclusion of these school populations (Šori et al., 2011; Yeasmin & Uusiautti, 2018). On the other hand, in Portugal, the second generation scores were lower than those of the first generation (OECD, 2016), as opposed to Northern Europe countries and the Netherlands, for example. Regarding reading, in Portugal, the second generation surpassed the first, yet native students continue to outperform their migrant peers in class (OECD, 2016). The main reason for coming to Portugal was family reunification, as in most immigration cases (Di Liberto, 2015; OECD, 2016), and immigration was on a permanent basis and in high numbers (9,607,397 individuals, OECD, 2016). Whereas Portuguese immigration declined in 2013, the number of refugees received increased twofold in the 2015–2016 timeframe (OECD, 2016).

Promoting the inclusion of migrant minorities and encouraging the educational equity proclaimed in the United Nations sustainability goals (OECD, 2018) is hampered by inequality of performance in immigrant groups (Welch, 2018). This difficulty is also attributed to school environment factors (Agasisti

& Zoido, 2018) and a lack of awareness that different groups of students involve different pedagogical approaches (Sakellariou, 2018; Woessmann, 2016). Furthermore, these groups are in different stages of development regarding their adaptation because they have different exposure times to the conditions of the host country and therefore different maturation.

One of the factors that has been less studied is exposure time or length of residence (LOR). In studies of the second language (L2), bilingualism and migrant populations, this terminology can also be identified with the "age of onset of acquisition" (referring to the age of the acquisition of L2 in the case of migrant populations). Immigrant (and refugee) students with lower levels of exposure tend to be more exposed to higher levels of anxiety and maladjustment to the host school compared to colleagues who, irrespective of their origin, entered the country more than five years earlier (Kia-Keating & Ellis, 2007; Salmela-Aro et al., 2018).

In the literature, the five-year period for immigrant status is considered "long term" (Grubanov-Boskovic et al., 2017). Students with the lowest LOR are among those facing more difficulties in PISA tests at an early stage, especially regarding problem solving (Martin et al., 2012). This was also verified in studies not related to the OECD (Jang et al., 2013). On the other hand, the last years of compulsory schooling are more associated with anxiety symptoms and lower rates of wellbeing in the general student population (Wang et al., 2015). Thus, the case of the immigrant school population of the same levels of education (especially between grades 10 and 11) is considered to be a group more subject to such symptoms and to wellbeing problems due to the need to adapt to new contexts and a new school environment.

Regarding the length of exposure or arrival date in the host country, several studies have examined the relationship between recent entry into the country and negative (school) performance as perceived by immigrant students (Bozick et al., 2016; Martinez-Taboada et al., 2017). Length of residence is associated with the likelihood of greater or lesser employment opportunities in the host country, with immigrants with more than five years of permanent residence in the country having an advantage. Portugal is part of the group of countries where this correlation has occurred, and, negatively, it is also one of the countries where immigrants perform professional functions requiring low literacy skills (Grubanov-Boskovic et al., 2017).

Portugal was also the object of analysis by Schnell and Azzolini (2015), based on data from previous PISA tests. In Portugal and in three other cases in Europe, the position of immigrants is fragile, especially those who arrive later (with lower LOR) and after the age of six years. The study highlights the

disadvantage variable of immigrant families who take on less specialised occupations than they could given their high level of education obtained in the country of origin (Schnell & Azzolini, 2015).

If 15-year-olds have a poor self-concept and underperform in tests, the likelihood of positive expectations about the labour market in the destination country decreases, as does their effective employability in specialised jobs requiring high educational qualifications. LOR may also influence other dimensions that are assessed in the PISA test but have not been adequately examined in the literature, such as school adaptation. Adjustment to school is measured in PISA (2015) according to items such as self-assessment of the sense of belonging and integration in the school of the destination country. To a large extent, this adjustment determines the level of inclusion and sense of belonging in the host society after completion of compulsory schooling (Schachner et al., 2017). Studies such as Schachner et al. (2017) indicate that host countries with more supportive and mediating inclusion measures for immigrant students (with Portugal appearing in the group of countries with moderate support measures) have better-adjusted and self-determined immigrant students, who also have better performance.

When related to specific ethnicities of migrant minorities, poor school adjustment is significantly associated with dropout rates and low levels of sense of inclusion in the school environment (Ali & Larsson, 2018). Adjustment to school occurs in several ways; for example, it is related to motivation *vis-à-vis* the school environment. However, the specific studies based on the performance and self-concept scores of immigrant students in the PISA tests are still not consensual about the evidence on school adjustment in immigrant minorities (Burgess & Heller-Sahlgren, 2018), and school adjustment in terms of sense of belonging remains poorly studied (Ham et al., 2017).

Loneliness in school perceived by the immigrant students also has a correlation with low school performances (Mai & Asma'A, 2016). The loneliness perceived by the subjects is also evaluated by PISA (OECD, 2016) and it is important to understand that these emotional aspects (such as perceived maladjustment) integrate the construct of sense of belonging (Chiu, Pong, Mori, & Chow, 2012). However, we have no knowledge of any study on the relationship between perceived loneliness and LOR for immigrant student groups.

Concerning professional expectations after schooling, that is, with regard to students' attitudes towards school (Chiu et al., 2012), little is yet known about the expectations of immigrant students and the observable expectations among different ethnic groups. In comparison with native peers and first-generation immigrants, however, immigrant subjects have higher rates of positive educational expectation, with the main variable that differentiates this

expectation being the host country and the respective conditions (Burgess & Heller-Sahlgren, 2018; Chykina, 2019). Furthermore, the educational expectation of second-generation immigrant students is strongly related to their willingness to enter higher education and to have better professional opportunities than their parents (Childs et al., 2017; Figueiredo et al., 2016). Educational preparation, especially the specialisation of skills in schools, leads to better professional opportunities for immigrants (Rangel & Shi, 2019).

Regarding the educational and professional expectations of young immigrants, Nygard (2017) confirmed that the optimism of immigrant status explains the high aspiration of immigrants to good levels of education. It also accounts for the diversified mobility of this population in the context of the plurality of educational opportunities. From an early stage, other authors (Bertschy et al., 2009) have reported that PISA indicators help us to understand students who are more or less suited to particular job opportunities. In contrast, a study by Nygard (2017) found that the early tracking of educational competencies and trajectories has underlined the perception of disadvantage, especially socioeconomic, of immigrant groups because of their difference in performance from that of their native peers (Feliciano & Lanuza, 2016; Fernández-Reino, 2016).

The present study has two objectives: (1) to evaluate the impact of the length of exposure in the host country (the age of immigration with the purpose of obtaining permanent residence in Portugal) of immigrant students aged 15 on three dependent variables related to school adjustment: sense of belonging to the school, perceived loneliness, and expectations of educational and professional opportunities after the completion of compulsory schooling; (2) to evaluate the differences in results for the same dependent variables, but considering the first and second generation of immigrants in Portugal.

Method

Participants

Sample selection followed the PISA sampling methodology based on the protocol determined by the Educational Testing Service (ETS, Princeton), which has defined the different versions of the PISA test (according to the countries and their official languages), the codification of items and the creation of databases. The main criteria for selecting the sample were that the students were 15 years of age and studying above the 7th year of schooling.

In 2015, 7,325 students from 246 schools participated in Portugal. The mean age of Portuguese students was 15.8 years (see Marôco et al., 2016). The type, size

and administrative nature of the school were criteria considered with the aim of covering the national population in an equitable way (mainland and islands).

Students who had been exposed to the Portuguese language for less than one year were excluded (in the case of immigrants). Students with cognitive, functional or intellectual disorders were also excluded. Aspects related to the limits for the careful exclusion of PISA were previously determined so as not to exceed school exclusion rates by country, which would bias the data (OECD, 2014).

The choice of the age of 15 years is related to the expected age for attending the cycle (high school) prior to the end of compulsory schooling. It is also the age group most likely to obtain information about professional prospects and actual performance in school, with applicability in two contexts of problem solving: in school and out of school. On the other hand, 15-year-old students are distributed by distinct school years, including grade-retained students.

For the present study, only the immigrant population in Portugal was selected: 438 cases, of which 205 declared they were female and 217 male. Of the female group, 108 (41.1%) belonged to the first generation and 97 (31.4%) to the second generation of immigrants. Of the male group, 128 (42.1%) were part of the first generation and 89 (30.5%) belonged to the second generation of immigrants (Table 1). Regarding the time of exposure in the host country (LOR), the duration varied from 1 to 14 years (M = 8.6; SD = 4.5).

Table 1

Demographic data from the Portuguese database of PISA 2015: natives and immigrants

Gender	Immigration	N of cases	SD
Female	Native	3372	.560
	Second-Generation	97	.314
	First-Generation	108	.411
Male	Native	3385	.483
	Second-Generation	89	.305
	First-Generation	128	.421

Instrument

Four blocks of items were used in the four literacy domains: reading, mathematics, science and problem solving, according to the PISA assessment protocol, with an estimated duration of 30 minutes to fill each block. Following Item Response Theory (IRT), the items were analysed regarding the difficulty index and the discrimination index.

The coding of the items had a 92% agreement for all countries in which the tests were conducted (OECD, 2016). In addition to the blocks of tests in the areas of science, reading, mathematics and problem solving, specific variables (which will be presented as indices and not items in this study) related to school adjustment, attitudes and self-concept were analysed by PISA.

Measures

Independent variables:
- Length of residence (LOR): the students indicate their date of arrival in Portugal, so the length of permanent residence is measured in years in PISA. In the SPSS database, we computed this variable to select only the immigrant cases and only for Portugal.
- First and second generation of immigrants: the "index immigration status" of PISA evaluates whether the participants belong to one of three categories: natives, first generation of immigrants, or second generation of immigrants.

Dependent variables:
- School adjustment is a psychometric scale that evaluates how well the student fits the school. It is composed of 4 Likert type items (1-strongly agree to 4-strongly disagree). One such item is "I feel awkward and out of place in my school" (PISA 2015 code: ST034Q04TA) and is intended to evaluate how students feel displaced in their school environment. Students have to respond on a scale of 1 to 4, with 1 being "strongly agree" and 4 being "strongly disagree".
- Another item is the perception of loneliness and wellbeing in school measured by the item (PISA code: ST034Q06TA) "I feel lonely at school" with a scale of response from 1 = "strongly agree" to 4 = "strongly disagree".
- Also related to school adjustment is expectation of career opportunities after compulsory schooling: expectation related to performance and professional opportunities after school is measured on a scale of response from 1 = "strongly disagree" to 4 = "strongly agree", where 1 corresponds to the absence of agreement with good options or professional opportunities after high school. The item is as follows: "I want to be able to select from among the best opportunities available when I graduate" (PISA code: ST119Q02NA).

Procedure

The tests were administered by test administrators with previous training in schools for the administration of blocks of tests and for coding tests in their respective academic areas. The test administrators received their training from a supervising teacher according to OECD parameters. Whenever there were doubts, administrators turned to their supervisor (Marôco et al., 2016, idem).

It was ensured that all of the selected schools were equipped with computers and the session dates were confirmed. The samples were checked and correctly identified by the test administrators. Each student was given a USB flash drive with the tests. After completing each test, the students submitted the answers that were stored via the web in the PISA database.

Data Analysis

The study focuses on variables concerning the individual's self-concept (see section Measures) and on school aspects through a series of linear regression analyses, considering the sampling weights of each student using the IDB Analyzer (International Association for the Evaluation of Educational Achievement, IEA). The sampling weights variable was identified as "Final Trimmed Nonresponse Adjusted Student Weight" (FSTUWT). The syntax produced by the IDB Analyzer was then run in SPSS Statistics (v. 24, IBM, Armonk, NY) on the previous immigrants selected database.

Results

- *Question 1*: to evaluate the impact of the length of exposure in the host country (the age of immigration) of immigrant students aged 15 years on three dependent variables related to the school adjustment: sense of belonging to the school, perceived loneliness, expectations of educational and professional opportunities after the completion of compulsory schooling;
- *Question 2*: to evaluate the differences in results for the same dependent variables identified in Question 1, but considering the first and second generation of immigrants in Portugal.

Question 1

Immigrant students with a shorter length of residence, and therefore with less exposure to the school context and to L2, had higher means regarding

school maladjustment and perceived loneliness in school, but not in a linear way. In the first case, in "school maladjustment", the subjects with one and four years of LOR are those showing less adjustment. On the other hand, with regard to perceived loneliness, four and five years of residence in the host country emerge as more critical periods, as the means are lower. See Figure 1.

Figure 1

Means and standard deviation scores considering LOR x sense of belonging (blue line), perceived loneliness (yellow line) and professional expectations after graduation (grey line)
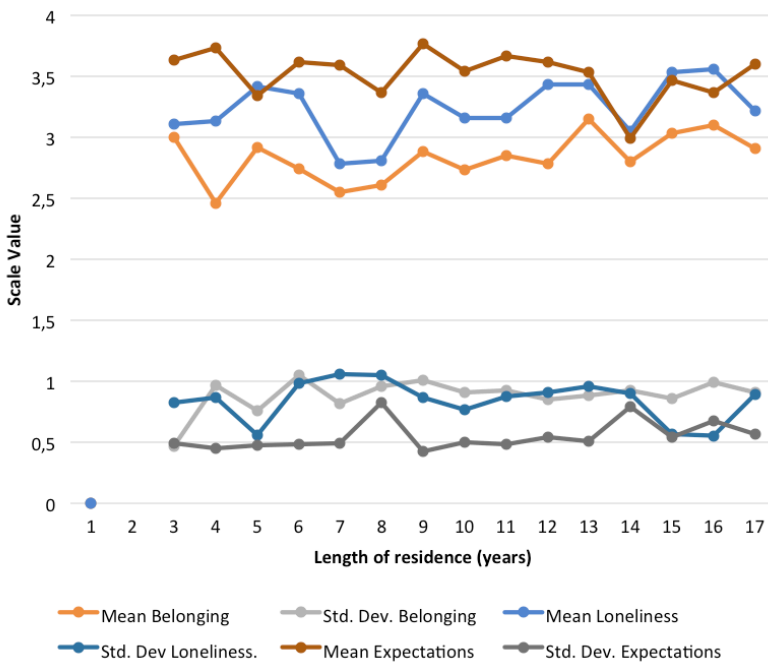
Tables 2 and 3 present a summary of the descriptive analyses (means of response by index) for the immigrant group regarding the three dependent variables and the coefficients of the linear regression analyses: in models 1 and 2 – sense of belonging x LOR (β = .051; S.E. = .011; t = 2.268; R^2 = .13) and perceived loneliness/wellbeing x LOR (β = .042; S.E. = .008; t = 2.401; R^2 = .10) – there are positive and statistically significant coefficients that point to the impact of LOR on the perception of school belonging and on perceived loneliness. It was verified (Figure 1) that recent arrival in the country was not always associated with low or negative levels of sense of school belonging and of perceived

loneliness in the school environment (and, consequently, in the learning environment). In general, however, the higher the LOR, the higher the school adjustment (mainly the sense of belonging).

In the third model, shown in Table 3, the coefficients are negative and highly significant, which reveals that the higher the LOR, the less stable the perception of good professional and academic opportunities that the immigrant students have, unlike the students recently arrived in Portugal (β = -.041; S.E. = .041; t = -3,597; R^2 = .22). By checking the means for each category (according to length of residence, Table 2) the subjects seem more optimistic about the possibility of choosing the best options (labour market) after high school. However, two cases were observed: individuals recently arrived in Portugal (in months <1 year) and others (14 years of LOR) presented lower means in this school adjustment index.

Table 2

Descriptive statistics for school adjustment: (1) sense of belonging, (2) perceived loneliness at school, and (3) professional expectations after graduation

	N	Minimum	Maximum	Mean	SD
Valid N (listwise)	438	<1 year	14 years	8.568	4.4807
I feel awkward and out of place in my school.		1	4	3.01	.879
Valid N (listwise)	427	<1 year	14 years	8.352	4.4632
I feel lonely at school.		1	4	3.39	.802
Valid N (listwise)	434	<1 year	14 years		
I want to be able to select from among the best opportunities available when I graduate.		1	4	3.14	.675

Table 3

Regression linear coefficients for indices of school adjustment: sense of school belonging (model 1), perceived loneliness at school (model 2) and professional expectations after graduation (model 3) considering Length of Residence (LOR)

	Regression coefficient	Coefficient β (s.e.)	Standardised (t-value)	*p*
Model 1	2.646	.104	25.346	
Constant sense of belonging	.024	.011	2.268	.051
Model 2	3.086	.091	33.751	
Constant perception loneliness	.020	.008	2.401	.042
Model 3	3.638	.055	66.659	
Constant expectations	.022	.006	.3597	-.041

Note. β – the standardised linear regression coefficients.

Question 2

As for the prediction of the generation of immigrants regarding the three dependent variables (the second research question of the study), the first- and second-generation groups did not differ significantly. See table 4.

Table 4

Regression linear coefficients for indices of school adjustment: sense of belonging

Immigration index status	Regression coefficient	Coefficient β (s.e.)	Standardised (t-value)	*p*
Model 1	3.032	.013	241.017	
Constant sense of belonging	-.007	-.080	.016	.001
Model 2	3.392	.012	278.174	
Constant perception loneliness	-.055	.055	.012	.010
Model 3	3.462	.011	314.391	
Constant expectations	-.053	-.424	.014	-.006

Note. β – the standardised linear regression coefficients. Model 1 = perceived loneliness at school; model 2 = professional expectations after graduation; model 3 = considering Immigration Index Status**.**

Discussion

The study initially aimed to examine the relationship between length of residence (or duration of stay in the host country) and variables related to the school environment, especially the perception of this environment by immigrant students in Portugal tested in the last PISA (OECD, 2016). For this question (Question 1), the results showed a significant impact of LOR on school adjustment, specifically on sense of belonging, perceived loneliness at school and expectations about professional opportunities after completion of compulsory schooling. The impact was perceived differently depending on the children's periods of residence in the country.

A more recent arrival date (lower LOR) did not always correspond to greater school maladjustment. On the one hand, as expected, students who had only arrived in Portugal a year earlier had a lower sense of belonging, thus corroborating previous studies by Kia et al. (2007) and Salmela-Aro et al. (2018). On the other hand, immigrant students with four years of residence (having entered Portugal at about 11 years of age) had a higher level of maladjustment (negative sense of belonging). These results, related to Question 1 of the study, are worrying, as they indicate different critical periods for the self-concept as perceived by the immigrants to the detriment of their development, especially regarding academic results (Parker et al, 2014).

Thus, there is not necessarily a correlation between less time in the destination country (less exposure to L2 and less experience in school) and low self-concept in indices such as those evaluated in the PISA test. There is a variability that must also consider the chronological (and maturation) age of the children (age of entry into the country and length of residence, which are two distinct variables), instead of being restricted to the typical factors that the literature analyses, such as socioeconomic status and parental investment (OECD, 2015). The OECD report (2015) shows the negative impact of exposure time in destination countries such as Portugal, but it only refers to academic performance (especially reading).

Our study presents the other side of PISA assessment, whose self-concept indices are important to explain the variation in immigrants' academic and cognitive performance. This variation has recently been examined in the context of self-concept indices of young immigrant students, underestimating the predictive effect of other factors, such as the influence of the mother tongue or the socioeconomic level (Huget et al., 2013). Still on self-concept, Weber et al. (2018) examined the perceived vulnerability of immigrant children (up to 15 years of age), the strong ethnic identity of students, and the low levels of academic

performance. The authors concluded that this vulnerability was associated with disturbance of the sense of belonging.

With respect to vulnerability and resilience in the first and second generation of immigrants, the same study by Weber et al. (2018) found that the first generation was more resilient. Probably this resilient behaviour was a result of less awareness of stereotypes, making first-generation immigrants more likely to be the least affected generation regarding the sense of belonging and adjustment. In our research, the two generations did not differ significantly in their sense of belonging. In the academic domain, but not in self-concept, another study (Di Liberto, 2015) analysed the difference between generations and concluded that the second generation has an advantage regarding performance.

Volante et al. (2019) found that in the context of academic (and cognitive) performance, the first generation scored lower in the same tests compared to the second generation, with the socioeconomic factor being a variable differentiating immigrant groups (immigrant groups with a more advantageous socioeconomic background tend to perform closer to immigrant peers). According to authors such as Cordero, Cristobal and Santín (2018), the differences noted in students and between countries in large-scale studies such as PISA, the Progress in International Reading Literacy Study (PIRLS) or the Trends in International Mathematics and Science Study (TIMSS) are largely due to the countries' assessment and inclusion policies and measures, especially in relation to multicultural groups. These differences are also due to the actual format of the large-scale assessment mentioned above (Cordero et al., 2018).

The present study focuses essentially on the factor of length of residence to explain the differences between migrant students. Previous studies have examined the age of immigration, which confers immigration status as identified in the PISA coding categories, although with greater expression in student immigrant groups in North America (Chen, 2019). One of the studied effects of LOR has been the effect of the presence of immigrants in the classroom on the performance of native colleagues, with negative effects being reported when students with lower LOR were included in the class (Bossavie, 2018).

National studies (Castigo, 2017) also found that the immigrant or descendant characteristics of the immigrant family affected the performance of immigrant children, in comparison with the better scores of their native peers (especially in the Lisbon area). In the present study, no significant differences between immigrants and natives could be addressed as statistically significant. Castigo (2017) refers to several other studies using multilevel analysis models with the same evidence: in PISA studies, low performance mainly in reading and mathematics is explained by immigrant status.

Still related to Question 1, regarding the feeling of loneliness, in the context of self-concept, it was found that students with four and five years of LOR had the lowest scores, which corresponds to the higher rate of perceived loneliness in the school environment of the host country. Interestingly, these periods – four and five years of length of residence – are identified as critical periods for the school immigrant population, as they appear frequently and weakly in the self-concept indices analysed in this study.

From another perspective, our data contradict information obtained in previous studies indicating that LOR equal to or greater than five years is less critical for positive self-concept and performance (Bozick et al., 2016; Martinez-Taboada et al., 2017). This evidence is in line with a study by Schnell and Azzolini (2015), in which Portugal is found to be one of the most fragile countries in terms of reception, especially for children over six years of age entering destination countries (considered a critical period by Schnell & Azzolini, 2015).

Recent studies (Nkemasong, 2018) have shown that immigrant students with low self-esteem and sense of belonging (to the community and school) become lonelier in school. Similarly, Chiu et al. (2012) concluded that the loneliness perceived by non-native students is significant, but that it can be attenuated by the teacher-student relationship. However, migrant students tend to isolate themselves in school, which increases the rate of perceived loneliness (Petreñas et al., 2011). PISA studies help us to understand the causes of immigrant underperformance if this type of self-concept index, as presented in this study, is examined, as the feeling of loneliness is a maladjustment that directly explains poor performance in the tests, either at the academic or cognitive level (Chiu et al., 2012). In prior research, loneliness was more prominently perceived in first-generation than second-generation immigrants (Strohmeier & Dogan, 2012). However, in the present study, addressing Question 2, this was not observed.

Although Portugal has only moderate measures regarding support for the reception of immigrants, these are not enough to explain the immigrants' scores in academic tests of the assessed literacy domains. Schnepf (2007) found a similar deficit in other European countries that are destination countries for immigrant students. On the other hand, in terms of the satisfaction index with professional expectations after completion of compulsory schooling, immigrant students in Portugal demonstrate expectation differences according to LOR. There are, however, two scenarios. First, those who have arrived more recently (<1 year) in Portugal have less favourable indices, as expected. Second, by contrast, students with maximum exposure time (or LOR) in Portugal are the least optimistic in this index.

These data support an earlier study by Grubanov-Boskovic et al. (2017), which identified Portugal as one of the countries in which the correlation between LOR and professional benefits is evident. In parallel with other European countries, Portugal demonstrates fragility regarding the professional characteristics of the positions occupied by working-age immigrants. Regarding the topic of career expectations after completing schooling in the host country, Scandinavian studies, such as those by Hvistendahl and Roe (2004), refer to the importance of school reception measures to ensure the academic success of immigrants, who sometimes exceed the performance of native peers. When referring to academic success and professional expectations, the access of immigrant students to higher education prior to entering the labour market in the host country is also relevant. In the last PISA (OECD, 2016), Marôco et al. (2016) reported that immigrants outperformed native Portuguese colleagues in some assessment areas. Expectations also influence academic performance, especially in generations of immigrants, which in turn influences the professional success analysed in the short term, from the early phase of transition from school to university and/or to the labour market (Bertschy et al., 2009).

Conclusion

The data from our study strongly indicate the predictive influence of length of residence (with the permanent duration index and not only "length of stay") in determining immigrant school adjustment. School adjustment incorporates the self-concept dimension. Multiple variables were used: sense of belonging, perceived loneliness and students' professional expectations after graduation. These were intentionally selected in the research based on the 2015 PISA study. For all three variables, LOR revealed a significant impact, although not linearly, as was the case in previous literature. This means that lower LOR (referring to months or less than a year of residence in the country of destination) does not entirely correspond to greater maladjustment, greater loneliness and less professional optimism. On the other hand, more evidence was collected regarding more critical periods of LOR (four and five years of residence in the host country, for example), which explains the variability in the self-concept of 15-year-old immigrant students assessed in the context of PISA, reporting specifically to Portugal. Question 1 of the study was fully addressed. For the Question 2, however, there was no significant data to explore the impact of generations of immigrants.

One of the limitations of the study is the lack of identification in PISA of the countries of origin of immigrant students. Country of origin is important

for a comprehensive analysis of crucial variables such as the individual's educational preparation prior to entering Portugal, the previous socioeconomic context, and the specific mother tongue (and languages spoken at home). However, the PISA database offers a high impact contribution to the educational orientation of the populations in their school and professional contexts. One of the objectives is to predict the trajectories of immigrant and non-immigrant students in the short and medium term, in higher education and in labour markets. This prediction is possible based on the conclusions of the performances of the students of more than 70 countries throughout the world. These performances indicate how reinforcement or maintenance measures can be taken to ensure academic and, subsequently, professional success.

These objectives and studies are also included in the sustainability advocated by the UN Goals 2030, specifically with regard to equity and access to quality education for all. We believe, however, that future research in the fields of psychology and education should benefit from the organised and valid contribution of this large-scale study (PISA) to explore the impact of immigrant students' self-concept on performance in the PISA tests.

Acknowledgments

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