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Learning to Read: the Case of Moroccan Students who Learn Spanish

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Abstract. The aims of this study are to assess L1 and L2 variables that influence the reading acquisition of students of Moroccan origin in the South of Spain and compare their reading ability with native Spanish-speaking children. Participants were 38 students of Moroccan origin and 37 native Spanish-speaking students from the same classes. We used an oral vocabulary test and a reading comprehension test, which taps lexical, semantic, and syntactic reading processes, and reading fluency. The results indicated that immigrant students differed from native Spanish-speaking students in word reading, reading fluency, and the use of punctuation marks, but there were no significant differences in reading comprehension. In native Spanish-speaking students, reading comprehension correlated significantly with oral vocabulary and the other reading processes, but in the students of Moroccan origin, only receptive oral vocabulary in L2 correlated with the use of punctuation marks. Being in schools with educational resources specifically aimed at helping the Moroccan pupils was associated with a higher level of word reading in immigrant students.

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Educational systems all over the World have increasing numbers of children of families of immigrant status. These children often find that teaching takes place in a language different from the one they speak at home. Although some are relatively bilingual, they are perhaps not always as fluent in the mainstream language as the native pupils.

There are many potential disadvantages of acquiring the majority language as a second language (L2) for academic achievement in general and reading in particular (Verhoeven, 2006). Oral language abilities in L2 are likely to limit reading comprehension, since it relies heavily on many discourse-level, semantic and syntactic processes common to listening comprehension. Phonological processes and representations may also be affected, leading to difficulties in word decoding (see Geva & Yaghoub Zadeh, 2006; Gottardo & Mueller, 2009; Koda, 2007).

Research into word reading has however provided some surprising results about the similarity of word reading levels and processes in minority and majority populations (Chiappe & Siegel, 2006; Droop & Verhoeven, 2003; Lesaux, Rupp, & Siegel, 2007). A certain number of pupils of minority groups do have problems in achieving adequate word reading. But the processes that explain these difficulties do not appear to be very different from those found for L1 readers. As with these, one of the main predictors of word reading ability is adequate phonological processing in the language in which reading is to be carried out (L2 for the minority readers; Chiappe & Siegel, 2006; Chiappe, Siegel, & Gottardo, 2002; Hutchinson, Whiteley, Smith, & Connors, 2004; Jongejan, Verhoeven, & Siegel, 2007; Lindsey, Manis, & Bailey, 2003; Lipka & Siegel, 2007). Overall, no differences in phonological awareness in the majority language were found between L1 and L2 readers. In other words, it would seem that difficulties with word reading in some L2 children arise more from individual differences than from their minority language status (August, Shanahan, & Shanahan, 2006).

Present data are much less clear for text comprehension. Lesaux et al. (2007) found no differences in comprehension measures in their study. In a study controlling for socioeconomic status (SES), Droop and Verhoeven (2003) did find that their Moroccan and Turkish-speaking children had lower comprehension

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scores than low SES Dutch native speakers. These results were confirmed in a later study with a sample representative of the Dutch school population of grades 3 to 6 (Verhoeven, 2006).

Text comprehension is closely related to cognitive and linguistic processes that are part of language proficiency (August et al., 2006). Proctor, Carlo, August, and Snow (2005) and Droop and Verhoeven (2003) found that oral comprehension and vocabulary in L2 were related to differences in performance on text comprehension. There also seems to be a general delay in syntactic awareness in L2 readers with respect to native-speakers (e.g. see Chiappe & Siegel, 2006, 1999; Chiappe et al., 2002; Lesaux, Lipka, & Siegel, 2006). Reading in Children of Immigrant Families in Spain

Although cultural diversity has been a reality in many countries for some time now, Spain has undergone a profound demographic transition over the past years. For example, the number of immigrants in 2005 was four times higher than in the year 2000 (Huguet & Navarro, 2006), and in the 2009–2010 academic year the educational system had nearly ten percent minority pupils (Ministerio de Educación de España, 2013). The largest communities found in schools are those from Latin America, specifically from Ecuador, and Morocco. Due to native-language differences, it is Moroccan children that present the greatest interest for the present study and potentially the greatest challenge for the educational system.

Moroccan and other Arabic-speaking minority students have been extensively researched in Spain over the past years. Virtually all studies looking at the reading level of children of Moroccan and North-African minority families found poorer performance than native Spanish readers (Navarro & Huguet, 2005, 2007; Roa Venegas, 2006; Vila, 2008).

These studies seem to be in conflict with some of the results found in the studies carried out in other countries, namely the United States, Canada, and the Netherlands, for children of families speaking minority languages. However, some of the Spanish studies control poorly for important mediating variables such as socioeconomic status (see Kieffer, 2008 for a study highlighting its relevance). In addition, reading comprehension has been measured through global non-standardized tests that do not provide accurate scores of many relevant processes involved in reading, such as word reading, syntax or inferencing (Brantmeier, 2006).

The lack of systematic and controlled studies on this group of children is unfortunate. Moroccan-minority children represent a group culturally and linguistically different from Spanish majority pupils. Moroccan Maghrebi Arabic or *Darija* is the Arabic dialect spoken in most of Morocco and it is relatively distant from Modern Standard Arabic. The greatest part of written communication in Morocco takes place in Modern Standard Arabic, whereas Darija is rarely written. Standard Arabic, on the other hand, is taught at school and only spoken in formal contexts. Children brought up in a Moroccan-speaking family in Spain will probably be reading in an L2 (Spanish) without practice in the written script for their L1 (Darija). This could possibly contribute to difficulties in mastering the written code in L2 (Gorsuch & Taguchi, 2010; Taguchi, Samamoto, & Gorsuch, 2006).

Although the number of studies looking at L2 native Spanish readers is comparatively high, very little research has been carried out looking at L2 minority pupils of other languages reading in Spanish. Since Spanish is a relatively transparent language, this could be a facilitating factor for reading acquisition in minority readers, considering previous research that points to easier word reading and spelling acquisition in transparent writing systems (Seymour, 2005).

Our study is aimed at responding to three research questions: (a) is the level of word reading and text comprehension of Moroccan-minority children in Southern Spain different from native Spanish-speaking readers? (b) what is the family and academic context and history of these Moroccan-minority children? and (c) do individual or contextual variables relate to individual differences in successful reading acquisition in Moroccan-minority children?

Method

Participants

Participants were 75 Spanish fifth and sixth year Primary school pupils (ages 11 to 13), 38 children of Moroccan families (63.2% and 36.8% first and second generation immigrants respectively) and 37 native Spanish-speaking families. Sixty-eight percent of the Moroccan students spoke a language other than Spanish at home. The rest only spoke Spanish. Only three immigrant participants were able to read Arabic. These children had learned Arabic in Spain in a *Temporary Linguistic Adaptation Class* (support classes for non-Spanish speaking children of immigrant families, see below). In these cases, Arabic should be considered a written L3, since their oral L1 was Moroccan Maghrebi Arabic and their written L2 was Spanish.

Both Moroccan and native Spanish-speaking pupils were selected from the same 19 state schools of the provinces of Seville and Cadiz (Southern Spain). For each immigrant child included in the study, the next native Spanish student on the class list was chosen for the control group, with the exception of one child. In this case, the native Spanish participant had to be excluded from the sample after data collection was

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completed, because we discovered that he did not meet the inclusion requirements. Socioeconomic status was medium to low for all children, and similar in the Moroccan and native Spanish children as a result of the selection procedure.

Gender distribution in the two groups was equivalent (21 boys in both groups and 16 and 17 girls among the native Spanish-speaking and immigrant students, respectively, $\chi^2 = .017$, $p = .896$). However, the groups differed in age, with Moroccan students somewhat older ($M = 11.7$, $SD = .67$) than the native Spanish-speaking students ($M = 11.4$, $SD = .73$), $t\ (73) = -2.25$, $p = .025$, $d = .42$. Time in the Spanish educational system was consistently higher than a year for all immigrant children ($M = 5.1$ years, $SD = 1.6$).

Non-verbal IQ on the Raven's Progressive Matrices was within normality for both Moroccan and native Spanish-speaking children.

The following inclusion requirements were met by all participants:

- No cognitive, sensory, or any other kind of evident limitation to reading. None of the participants was enrolled in special education classes.
- A minimum of three years schooling in any language or country. This requirement was intended to guarantee a minimum level of instruction in reading and to eliminate the possible effects of late schooling.
- A minimum continuous residence in Spain of one year prior to data collection, in order to guarantee a working knowledge of Spanish. All immigrant children knew enough Spanish to participate normally in classroom activities.

Instruments and Procedure

The following instruments were used:

Spanish Peabody's Picture Vocabulary Test

(*Test de Vocabulario en Imágenes de Peabody,* TVIP: Dunn, Dunn, & Arribas, 2006), for the assessment of oral language and vocabulary in Spanish. This instrument is considered a valid and reliable measure of vocabulary and overall linguistic competence (Campbell, Bell, & Keith, 2001). Reliability data are relatively high, with a median correlation of .7 with other vocabulary tests in over 300 studies (Anastasi & Urbina, 1998). It is one of the most widely used tests of its kind in bilingual research (Manriquez-López & Tomasini, 2006).

A Moroccan translation of the TVIP (MTVIP)

A translation of the instrument in Darija was specifically developed for this study. The Spanish version of this test was translated into Moroccan by a native speaker. Another native speaker independently carried out an additional translation. Both translations were compared and a 90 % agreement found. A third native Moroccan college graduate revised the translation and resolved discrepancies with the second translator through consensus, reaching 100 % agreement.

Reading Processes Test - Secondary Education Version

(*PROLEC-SE. Evaluación de los procesos lectores en alumnos de tercer ciclo de Educación Primaria y Secundaria Obligatoria,* PROLEC-SE: Ramos & Cuetos, 1999), for reading proficiency in Spanish. This is a standardized reading test widely used in Spain for children ages 10 to 16. It includes three subscales: (a) lexical processing (PL), (b) syntactic processing (PS), and (c) semantic processing or text comprehension (PSe). The PL scale includes word (Pale) and a non-word (Ppse) reading tasks. The PS scale is composed of a task requiring picture-sentence matching of different grammatical structures (Edoe) and a punctuation mark reading task (Spe). The PSe scale is composed of two reading comprehension tasks. In the first one (Cte), participants must read two expository texts, each followed by 10 questions, half of them on details or literal information from the text and the other half requiring inferences. In the other task (Ete), children are asked to read an expository text and fill-in a corresponding outline. Reading fluency (defined as reading speed while reading text) is also registered (Vle). Reading speed has been shown to be a strong indicator of reading difficulties in Spanish (Davies, Cuetos, & González-Seijas, 2007; Serrano & Defior, 2008).

The authors of the test report good reliability ($\alpha = .85$) and highly significant correlations of all the subscales with teacher reports of student reading ability ($p < .0001$) (Ramos & Cuetos, 1999: pp.24 –25).

Personal history, academic, and family questionnaire[1]

The teachers were interviewed and asked to provide information about the children's biography, family, daily-life routines, and living context, their origin and prior schooling, their attitude and their families' towards the school, and current school context and practices. It is an extensive questionnaire, although only some of the variables were included in this study. Variables of interest here were academic and social competence with respect to class average, interest in academic achievement, and absenteeism, as perceived by teachers. Teacher reports of specialized support in schools, such as linguistic and cultural support and curricular adaptations were also collected. With respect to family context, parental perception of the schools,

[1]Accessible at http://bscw.rediris.es/pub/bscw.cgi/3932122

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their attitude towards education and the degree of implication in their children's learning as perceived by teachers were also registered. When there were doubts about the accuracy of the information provided by a teacher, his/her response was complemented with an interview to the student and consultation of the school records.

All the field work was carried out by Moroccan bilingual Spanish-Moroccan staff visiting the schools. They all received specific training in the application and correction of the instruments, which guaranteed full agreement amongst raters. The Moroccan students were allowed to respond to the questions in their language of choice. The order of administration of the student tasks was counterbalanced.

Data Analysis

Due to non-normality of the data and the sample size, non-parametric tests were used in most comparisons, with a significance level of .05. The appropriate measure of central tendency for this type of data is the median, and is used whenever group scores are presented (Gibbons & Chakraborti, 2003). For parametric contrasts, Cohen's *d* is reported as an effect size measure. For non-parametric analyses, correlation effect size *r* was considered to be more appropriate (Fritz, Morris, & Richler, 2011). Effect sizes can be considered large for *d* values higher than 0.8 and *r* higher than 0.37, and intermediate as from 0.5 and 0.24, respectively.

Immigrant and native Spanish-speaking groups were initially compared on raw reading and oral comprehension ability scores. Comparison to the general Spanish same-age population was also carried out by using percentile scores provided by the different standardized tests. Both these comparisons are presented in the initial part of the Results section that follows below. Family and school contexts for these students are described in the second part.

Results

Reading in Spanish and in Arabic

We obtained separate raw scores for each task of the PROLEC-SE. In order to facilitate the interpretation of the results, we also used the lexical scale (word and non-word reading) (PL), the syntactic scale (pairing drawing-sentence and punctuation marks) (PS), and the semantic scale scores (text comprehension and text structure) (PSe) following the recommendations in the test's manual. Table 1 shows that Moroccan students scored lower than the native Spanish-speaking students on all three scales. However, the differences were only significant in the case of the syntactic scale, U (N = 75) = 484.00, p = .013, r = .29.

In contrast, analysis of the individual tasks revealed some additional group differences. No differences were found in the raw accuracy scores of non-word reading. However, the native Spanish-speaking children had a higher mean accuracy score in word reading and greater reading fluency, U (N = 75) = 491.50, p = .024, r = .26, and U (N = 75) = 361.00, p < .001, r = .40. With regard to the syntactic processes, although the Moroccan students did not present significant differences with the native Spanish-speaking children in sentence-to-picture matching, there were differences in the use of punctuation marks, U (N = 75) = 440.50, p = .005, r = .32. None of the semantic scale tasks, directly related to text comprehension, revealed significant differences between immigrant and native Spanish-speaking students.

Percentile scores were also used because they illustrate the reading level of the participants with respect to the general population. They could help indicate whether the lack of differences between the groups in these participants is the result of good reading performance in the immigrant group or a poor performance on the part of both immigrant and native participants.

The percentile scores of the Moroccan children were low for both word and non-word reading (see table 1). This also occurred with native Spanish-speaking children in the case of non-words, although not with word reading. Moroccan students' percentile scores were in the low range (*Mdn* = 20, 5 – 75), whereas the native Spanish-speaking group's scores spanned the distribution of the test scores (*Mdn* = 60, 5 – 95).

The percentile scores in the syntactic and semantic tasks, however, were lower than expected for both groups. For example, the median of the native Spanish-speaking pupils in the sentence-to-picture matching task was slightly lower than expected, and the immigrant children had even lower scores (see table 1). In the test of punctuation marks, there appeared to be a floor effect for both groups (*Mdn* = 10, 5 – 50 and *Mdn* = 10, 5 – 75, for immigrants and native Spanish-speaking students, respectively), although with a lower range for the Moroccan children.

The semantic tasks were also difficult for both groups. The median percentile scores for the tasks of text comprehension were 38 (5 – 93) for the native Spanish group and 25 (5 – 83) for the Moroccan group, and 18 (5 – 90) and 8 (5 – 75) respectively on the text structure task.

Oral vocabulary comprehension in Spanish and Moroccan

Results of the TVIP test indicated a lower level of oral comprehension in Spanish among the Moroccan students. Their mean raw score was 108.5 (*SD* = 20.3) versus 119.6 (*SD* = 19.4) in the native Spanish group,

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Table 1. *Raw and percentile scores on the different Spanish reading tasks and scales*

	Native Spanish Speakers (n = 37)			Immigrants (n = 38)		
	Median (Percentile)	Minimum	Maximum	Median (Percentile)	Minimum	Maximum
PL	73	60	79	72	41	79
Pale (*)	38 (50)	31 (5)	40 (95)	37 (25)	21 (5)	40 (90)
Ppse	35 (38)	27 (5)	39 (90)	35 (25)	20 (5)	40 (90)
PS (*)	35	19	46	29	12	43
Edoe	19 (44)	6 (5)	23 (75)	15 (25)	7 (5)	24 (95)
Spe (*)	17 (10)	6 (5)	24 (75)	14 (10)	2 (5)	23 (50)
Vle (**)	103 (60)	50 (5)	147 (95)	73 (20)	50 (5)	131 (75)
PSe	12	1	32	9	2	23
Cte	5 (38)	1 (5)	13 (93)	4 (25)	0 (5)	11 (83)
Ete	6 (18)	0 (5)	19 (90)	4 (8)	0 (5)	15 (75)
	Median (SD)			Median (SD)		
TVIP (*)	119.6 (19.4)			108.5 (20.3)		
MTVIP	103.4 (24.9)			–		

Note: PL = Lexical scale; Pale = Accuracy of word reading; Ppse = Accuracy of nonword reading; PS = Syntactic scale; Edoe = Accuracy of sentence-to-picture matching; Spe = Accuracy of use of punctuation marks; Vle = Reading fluency (words per minute); PSe = Semantic scale; Cte = Accuracy on the reading comprehension task; Ete = Accuracy on the text structure task; TVIP = Spanish Peabody's picture vocabulary test; MTVIP = Moroccan adaptation of Peabody's picture vocabulary test.
(*) $p < .05$; (**) $p < .001$.

t (73) = 2.32, p = .023, d = .55. Surprisingly, the immigrant scores on the Moroccan version of this test were not significantly different from their Spanish vocabulary scores (M = 103.4, SD = 24.9).

School and family history and context

Academic profile of the Moroccan students. Teachers had been asked whether the immigrant students scored above, below or at the average level of their class. Teachers rated 11 children as having an academic performance above the average of their class, 13 as being on average and 14 below.

Most of them (n = 27) were considered by their teachers to have acceptable social relations, similar to those of their classmates. Some (n = 8) were considered especially well adapted by their teachers. Only three were rated as below average. The attitude of the rest of the students towards them was rated as positive and above average in 33 cases, and below in one case.

The data with regard to these students' behavior at school are more varied. Thus, ten children had absenteeism problems. A similar number of children did not seem particularly interested in learning. Seventeen regularly did not complete their homework.

The educational context. Most of the schools received additional support for the special educational needs of immigrant students. Only 2 out of the 38 immigrant students were in schools in which there was no support teacher for them, and 2 did not receive support from the district Educational Counseling unit. Teachers reported that they adapted the curriculum to adjust to the needs of 30 immigrant students. Thirty-two also received extracurricular supplementary classes. The curricular adaptations consist in changes in methodology and instructional content that regular teachers can implement within the ordinary classroom and timetable. Extracurricular supplementary classes are voluntary activities scheduled outside regular lessons for one to three hours a week. They do not necessarily have a structured academic content and include, for example, homework supervision, dance lessons, or sports. Both curricular adaptations and extracurricular supplementary classes are general curriculum enrichment and organizational strategies accessible to all schools in Southern Spain.

Other resources are *specifically* tailored to immigrant students and are not available in all schools. The number of students who were in schools with these kinds of resources was somewhat lower, although still considerable. This was the case of 29 students who were in schools that collaborated with organizations providing support to immigrant populations, 12 students in schools with a cultural mediator, and 23 that had a Temporary Linguistic Adaptation Class (TLAC). The cultural mediator is a person from the same minority group as the immigrant students who acts as a linguistic and cultural bridge between the students and the school. TLACs

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are classes where these students receive academic support (for approximately two hours a day and for a maximum of one academic year) in order to reach an adequate level of proficiency in the L2. Eleven students were in schools that had specific educational material in the immigrants' language of origin.

The relation between the families and the schools. Teacher reports about their attitude toward their child's education and their perception of schools were relatively positive. Most of the families ($n = 26$) would like their children to continue their schooling for as long as possible, even to a university level. Eight of them hoped their children would at least complete compulsory schooling, and only three were indifferent. Only one family seemed to contemplate the option of vocational education.

Teachers informed that parents seemed to be actively involved in their children's motivation to study. Their response to good grades was to reward the children with money or other presents as soon as they received their reports (13 children) or at the end of the school-year ($n = 6$). Thirteen families provided social reinforcement. Of the remaining six families, only two did not reinforce their children's good performance.

Teachers' responses about the families' attitude towards the school were along these same lines. Twenty-five of them had a positive attitude and two were actively enthusiastic. There were, however, a number of families that were indifferent ($n = 5$), had an attitude of resignation and passive acceptance ($n = 5$), or even explicit rejection ($n = 1$). In 28 of the families, a stable and active collaboration with the school was reported, although in the remaining 10 there was no such contact.

Individual differences in reading

Raw scores on the scales of the PROLEC-SE correlated significantly with each other in the group of native Spanish-speaking students (see Table 2). However, this was not the case with the group of Moroccan pupils, where the correlation between the semantic and lexical scales was non-significant. Raw scores on the semantic scale, however, correlated significantly with the raw score of the TVIP test. This was not the case for the Moroccan version of this test. There was also a large correlation of the TVIP and the time of schooling in Spain among the Moroccan students.

In both groups, reading fluency correlated with reading comprehension in Spanish ($r = .37$, $p = .024$ for the immigrant students and $r = .34$, $p = .038$ for the native Spanish-speaking students).

We found significant differences between the children in schools that did and those that did not have cultural mediators and/or a relation with immigrant organizations. Children in schools with these kinds of support had higher raw lexical scores. Median lexical raw scores of Moroccan children in schools with cultural mediators was 72.5 (66 – 79) versus 67.0 (41 – 79) in those who were in schools without them, U ($n = 38$) = 76.5, $p = .012$, $r = .29$. The Moroccan children in schools that collaborated with immigrants support groups also had higher lexical raw scores ($Mdn = 74.0$, 54 – 79) than those who were in schools where this was not the case ($Mdn = 65.0$, 41 – 72), U ($n = 38$) = 43.5, $p = .003$, $r = .35$. There were no differences in students from these schools in the time they had spent in Spanish schools or in their scores on the TVIP.

These educational resources (cultural mediator and relation with immigrant organizations) are not specific to particular children within each school, but can affect the nature and style of intervention carried out with all the immigrant children in the center. It seemed appropriate to carry out additional analyses considering schools as units. In these analyses, a mean score for the immigrant and native Spanish-speaking children in each school was calculated. We classified the schools into three types. First, those that had both types of resources (cultural mediators and relation with immigrant support groups), and could be considered schools with maximum support ($n = 2$ schools, 10 immigrant students). A second group ("medium support") included the schools with at least one of these supports ($n = 7$ schools, 15 immigrants), and a third "lower support" group that included 9 schools (13 immigrants). There were significant differences among the raw lexical scores of the three kinds of schools, χ^2 (2, $n = 38$) = 12.51, $p = .002$ for the Kruskall-Wallis test. The schools with lower support had lower median raw lexical scores ($Mdn = 65.0$, 41 – 74) than the students from the schools with medium support ($Mdn = 73.0$, 57 – 79), U ($n = 25$) = 37.5, $p = .006$, and high support ($Mdn = 74.0$, 61 – 79), U ($n = 28$) = 11.5, $p < .001$. However, the differences between the students of these two kinds of schools were not significant. This did not occur in the case of syntactic or semantic scores. There were no differences in the times the Moroccan students of each kind of school had spent in Spanish schools or on their TVIP test scores. There were no differences among the three types of schools in the scores of the native Spanish-speaking students.

Discussion

This study presents data on the reading performance of immigrant students of Moroccan families in Southern Spain. These children access Spanish as an L2 from an oral language (the Moroccan Arabic dialect) that is rarely used in a written form. Despite this circumstance, these students did not present lower Spanish

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Table 2. *Correlations among the different reading scales, vocabulary scores and time in the Spanish educational system*

		PL	PS	PSe	Pbe	Pbm	TEE
Native Spanish	PL	–					
	PS	.442(**)	–				
	PSe	.441(**)	.630(**)	–			
	Pbe	.532(**)	.454(**)	.610(**)	–		
Immigrant	PL	–					
	PS	.495(**)	–				
	PSe	.143	.381(*)	–			
	Pbe	.181	.257	.462(**)	–		
	Pbm	.113	.053	.017	.075	–	
	TEE	–.175	.159	.264	.539(**)	.126	–

Note: PL = Lexical scale; PS = Syntactic scale; PSe = Semantic scale; Pbe = Raw score on the Spanish version of the Peabody Picture Vocabulary test; Pbm = Raw score on the Moroccan version of the Peabody Picture Vocabulary test; TEE = time spent in a Spanish school.

(*) $p < .05$; (**) $p < .01$.

reading comprehension scores compared to native Spanish-speaking students from a similar background, and they were only different from them in tests that assess word reading, reading fluency, and punctuation marks.

In contrast to other studies conducted with other immigrant populations (Chiappe & Siegel, 2006; Droop & Verhoeven, 2003; Lesaux et al., 2007; Lipka & Siegel, 2007), we found differences in the word reading of the Moroccan immigrants and the native students. These difficulties could stem from individual differences in reading acquisition and be unrelated to the linguistic minority status of the Moroccan children (August et al., 2006). However, these students read non-words with the same ability as the native Spanish-speaking participants, which seem to rule out this hypothesis. We feel that their poorer word reading performance is more likely due to less prior exposure to Spanish written texts.

Reading fluency is a variable that has received very little attention in the studies dedicated to reading comprehension in L2. In one of the few studies that does consider it specifically, Saiegh-Haddad (2003) found that reading fluency and reading comprehension were correlated in adult readers of an L2 (English), but not in L1 (Arabic and Hebrew). In our study, despite immigrant students' poorer reading fluency compared to the native Spanish-speaking pupils, reading fluency correlated in both groups with reading comprehension in Spanish.

The immigrant students also had lower scores on the syntactic scale of the PROLEC-SE, especially in the use of punctuation marks in reading. This result is consistent with studies that have observed lower scores on syntax tasks in L2 readers with regard to native readers (Chiappe & Siegel, 2006, 1999; Chiappe et al., 2002; Lesaux et al., 2006). However, in our case, the fact that the native Spanish-speaking students also had lower than normal scores in the task of punctuation marks cannot be ignored. The poor syntax of the immigrant students could thus be attributed to contextual variables shared by both groups, rather than to the influence of linguistic differences.

With regard to text comprehension and coinciding with other studies (e.g., Lesaux et al., 2007), the students of Moroccan origin were not different from their native Spanish-speaking peers of the same background. Their lower scores on word reading, reading fluency, and punctuation mark tasks, did not seem to compromise their performance in reading comprehension. In this sense, our results are congruent with Zinar (2000), who proposes that the deficits in word reading may be compensated with other strategies, such as comprehension monitoring, that favor reading comprehension.

In contrast to the native Spanish-speaking students, the vocabulary knowledge of the Moroccan children correlated with reading comprehension scores. In other words, although the two groups do not differ in their poor reading comprehension, the data point to possible differences in the causes of this poor performance. In the immigrant students, poor reading is associated with a low level of vocabulary in L2, whereas this may not be the main variable in the case of the native Spanish-speaking pupils. This would support the position of Verhoeven (2000) and Gottardo and Mueller (2009), who argue for separate models to explain the reading comprehension of native-speakers and learners of an L2.

Of the remaining contextual variables examined, only the provision of specific resources for immigrants has some influence on their reading level. The immigrant students in schools with cultural mediators and/or collaborating with associations of immigrants scored

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higher in lexical reading processes (word and non-word reading). This advantage could be a result of the application of educational methods better adapted to the culture of origin of the immigrant students or that at least allow them to build bridges between the Moroccan and Spanish cultures. Future studies should examine this possible influence in greater detail. In any event, it should be noted that these resources have a specific impact on the Moroccan children: the differences in immigrant students' reading between these schools and those without any support did not extend to the scores of native Spanish-speaking children.

The absence of a relation between the measures of mastery of L1 (Moroccan) and reading comprehension in L2 is not new (see Gottardo & Mueller, 2009 for similar results). It may be explained by the fact that these students had not had any prior literacy experience in their own language, i.e. Modern Standard Arabic, and they currently attended classes where instruction in reading comprehension was carried out in Spanish. Only the studies that assess initial reading comprehension in children educated in bilingual contexts find a significant connection between the variables of the L1 and reading in L2 (Gottardo & Mueller, 2009).

In our study, we have found fewer differences in reading between the immigrant and the native pupils than most of previously published research. This may be due to the fact that our participants were from the same schools and thus from similar background, and to the specific characteristics of the L2 in this case. Spanish is a language with a transparent orthography that may be easier to acquire than other more opaque languages (Mc Dougall, Brunswick, & Davies, 2010; Seymour, 2005). In addition, our study has analyzed the differences in a variety of dimensions (lexical, semantic, and syntactic) involved in reading, which may help to draw a clearer profile that better matches reading performance in an L2.

The study has certain limitations that should be considered. First, it is a study that only includes immigrant children of Moroccan origin. Generalization to immigrant children with parents of other nationalities should therefore only be done with caution. Second, data were obtained in a geographical area in which Spanish is the mainstream language. Moroccan students living in other countries or regions in which they must learn the majority language other than Spanish may present different profiles from those shown here.

Also, the number of participants in some of the analyses (namely those carried out using schools as a unit), is somewhat small. Conclusions derived from these results, although interesting, are to be considered with caution. In any case, the type of educational interventions that are most adequate for promoting academic achievement of immigrant children that adopt a new language is of great importance and warrants further study.

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