



The socio-familiar context and its impact on student reading performance in PISA

El contexto sociofamiliar y su incidencia en el rendimiento lector del estudiante en PISA

Esteban Vázquez-Cano

<https://orcid.org/0000-0002-6694-7948>
Universidad Nacional de Educación a Distancia (UNED)

Ana-María De-la-Calle-Cabrera

<https://orcid.org/0000-0003-3783-2399>
Universidad Loyola Andalucía

Carlos Hervás-Gómez

<https://orcid.org/0000-0002-0904-9041>
Universidad de Sevilla

Eloy López-Meneses

<https://orcid.org/0000-0003-0741-5367>
Universidad Pablo de Olavide

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Contact:

evazquez@edu.uned.es

Abstract

This study aims to analyse the influence of parents' educational level, profession and their educational role on the reading performance of their sons and daughters in a comparative way between English and Spanish-speaking countries. The study is approached from a multilevel analysis and binary logistic regression. The results show that the sociofamiliar context provides a prediction around 20% in Spanish-speaking countries and 15% in English-speaking countries. The most significant incidence is produced by the average educational level of the parents and their interest of the parents in the school activities and the educational support to their children in both blocks of countries.

Resumen

Esta investigación pretende analizar la influencia del nivel educativo de los padres y madres, la profesión y el rol educativo de los mismos en el rendimiento lector de sus hijos e hijas de forma comparada entre países de lengua inglesa y española. El estudio se aborda desde un análisis multinivel y de regresión logística binaria. Los resultados muestran que el contexto sociofamiliar aporta una predicción entorno al 20% en países de habla española y el 15% en países de habla inglesa. La incidencia más significativa se produce por el nivel de estudios medio de los padres y la muestra de interés de los padres en las actividades escolares y el apoyo educativo hacia sus hijos en ambos bloques de países.

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Introduction

The family situation of parents in terms of socioeconomic, professional and educational status (*Socioeconomic Status*, SES) and its impact on the academic performance of their children is a topic with broad scientific and educational implications (Patall *et al.*, 2008). This impact is an especially relevant issue since personal and individual factors can operate on it helping families to guide and enhance the academic performance of their children. Such impact has become increasingly important as international studies include these variables in determining school success, especially PISA (Programme for International Student Assessment) and TIMSS (Trends in International Mathematics and Science Study) (Domina, 2005; Fan, 2001; Vázquez-Cano, Sirignano & López-Meneses, 2014). Reading literacy is one of the basic skills that all students must acquire during compulsory education and is an essential competence for the personal, social, academic and professional performance of all individuals.

The main objective of this research is to verify whether there are any differences in the link between the level of parental education and the parents' occupation and educational role, and the reading performance of their children at the end of adolescence, in three English-speaking countries (Great Britain, United States and Ireland) and three Spanish-speaking countries (Spain, Chile and Uruguay).

The socio-familiar context and the level of parental education and their impact on the reading performance of students according to PISA

Research on the impact of the educational and academic level of parents on the performance of their children has not yielded conclusive and irrefutable results applicable to all educational contexts and situations so that formulas for family action can be extrapolated to different

countries and socio-educational areas. As a matter of fact, several studies have shown that there are important divergences in the incidence of SES on the academic performance of students. Therefore, a series of studies can be identified providing positive evidence of the impact of the SES on academic performance (Hong & Ho, 2005). On the contrary, other studies show that there is no substantial improvement in student outcomes (Fan, 2001; O'Connell, 2019; Patall, Cooper & Robinson, 2008). Other researchers have also found that such incidence may be negative (Coleman & McNeese, 2009; Domina, 2005). There are also contradictory cases in families with low SES: the involvement of a number of families in their children's studies is greater and this involvement has the most positive impact on the academic results of the relevant students (Domina, 2005; Jeynes, 2007; Sayans-Jiménez, Vázquez-Cano & Bernal-Bravo, 2018; Vázquez-Cano, 2013, 2017).

In this sense, parental education, as a factor of socioeconomic status, is linked to the student's academic performance. The scientific literature suggests that parents with higher levels of education have a higher proportion of children in higher education (Drolet, 2005; Knighton & Mirza, 2002). Likewise, parents with higher levels of education encourage higher levels of motivation and aspiration in their children (De-Broucker & Underwood, 1998; Lareau & Weininger, 2003). In general, these families also have greater financial resources and create higher expectations among their children (Edgerton, Peter and Roberts, 2008). In this sense, students more typically live in different family and socioeconomic circumstances that condition their academic performance and their reading literacy more specifically. Thus, the impact of the family context is perceived as a conditioning factor of the academic performance of students (Bronfenbrenner, 1994; Harkness, Super, Barry, Zeitlin & Jennipher, 2009). For this reason, the impact of the family context has shown itself to be an influential factor in the

improvement of reading literacy in developed countries (Farver, Xu, Eppe & Lonigan, 2006). Studies analysing the impact of the family environment in developing countries and among more minority populations also show positive results (Aram & Levin, 2002; Ngorosho, 2011). School and home contexts are highly significant in acquiring and perfecting reading literacy, and a positive interrelationship seems to yield better results in the development of reading comprehension (Bronfenbrenner, 1994; Epstein, 2001). Therefore, households in which reading is promoted in a formal but mostly informal manner have a positive impact on the development of competencies among children and adolescents (Kirby & Hogan, 2008; Reese & Gallimore, 2000). On the contrary, households with lower incomes, low level of parental education and few belongings reduce the level of students' reading skills and academic development (McLoyd, 1998; Farver *et al.*, 2006). As we can see, research generally shows that the family environment and family wealth have a significant impact on school performance, although there are many exceptions and differences (Breen & Jonsson, 2005).

According to the most recent PISA studies carried out in the 21st century, the influence of the family context shows a clear impact on the academic performance of students in all countries. For example, differences in the family background across Organisation for Economic Co-operation and Development (OECD) countries explain more than 22% of the difference in outcomes and, more particularly, an average of 13% in terms of in reading (Bradley & Corwyn, 2002; OECD, 2010; Solano-Flores & Milbourn, 2016).

Method

This research aims at analysing the relationship between the educational level parental education, the parents' occupation and educational role, as well as the reading performance

of their children at the end of adolescence in three English-speaking countries (Great Britain, United States and Ireland) and three Spanish-speaking countries (Spain, Chile and Uruguay). We analyse the social and family variables and their predictive value with regard to reading performance. Firstly, we analysed the predictive value of the educational level, profession and educational role of parents in each country through multilevel analysis, and established a comparative measurement. Secondly, we analysed the predictive value of the three social and family variables by performing a binary logistic analysis in each country.

In a nutshell, our study has two main objectives:

1. Analysing the predictive value of the social and family variables, related to the educational level, the profession and the educational role of parents with regard to reading performance at the end of adolescence in English- and Spanish-speaking students.
2. Studying the impact of language on the predictive value of social and family variables with regard to reading performance.

Participants

Participants in this study are recruited from the PISA 2015 databases. More specifically, participants have been selected on the basis of their mother tongue (Spanish or English). Therefore, we selected 30,000 students aged 16 (average age=15.92; 50.2% girls), nationals of 6 countries participating in the PISA 2015 assessments, such as Spain, Chile, Uruguay, Great Britain, United States and Ireland. In a first phase, these countries are selected on the basis of the fact that their official language is Spanish or English, the latter being the language most spoken by their inhabitants. In a second phase, two other inclusion criteria are prioritised in the selection process: 1) the countries are members of the OECD and/or 2) that they are among those with the highest average performance in PISA

2015 (OECD, 2016) The results in reading of the two blocks of countries were as follows: Spain (493), Chile (447), Uruguay (435), United States (496), Ireland (503) and United Kingdom (509).

Data analysis

The data are analysed using the SPSS statistical package. Firstly, the samples from the different countries are made comparable so that a comparative analysis of the results can be performed subsequently. Students are thus selected from the original database through random sampling in each nation (n=5,000 students). Dependent variables and predictor variables are then defined. Dependent variables are those quantitative variables that refer to reading performance in the PISA 2015 database, which correspond to 10 items included in the reading test. On the other hand, predictor variables refer to social and family variables, such as: (1) the level of parental education according to the International Standard Classification of Education; (2) the parents' occupation according to the International Standard Classification of Occupations and (3) the educational role of parents

The variables that measure this construct are 4: 1) "My parents are interested in my school activities"; 2) "My parents support my academic efforts and achievements"; 3) "My parents support me when I have difficulties in school": and 4) "My parents encourage me to have confidence." These variables were numerical and under the form a scale format in the database; nevertheless, they are recoded into nominal variables and result in two different values corresponding to the following levels: 1) No ("strongly disagree" and "disagree"); and 2) Yes ("agree" and "strongly agree")

Variables are analysed on the basis of the speech of the students in each country. Cases are classified into two groups: Spanish-speaking students (Spanish, Chilean and Uruguayan) and

English-speaking students (British, American and Irish). The first analyses are descriptive and inferential. They explore the results obtained in the reading test item by item as well as the overall results and compare the performances of English- and Spanish-speaking students. Secondly, discriminant analysis deepens the analysis of differences in reading performance between groups and determines the items that classify students on the basis of their speech. Thirdly, the multi-level analysis determines the predictive value of the socio-family variables (educational level, occupation and educational role of the parents and reading performance of students) for the reading performance of Spanish-speaking students and English-speaking students. Multilevel analysis is calculated using the Type III method of sum of squares. The predictive value of the socio-family variables is then analysed through distribution of cases in quartiles (Q1=students with optimal reading performance; Q2=students with good reading performance; Q3=students with average reading performance and Q4=students with poor reading performance). The total performance variable (summation) is recoded into four nominal variables (0=does not meet profile, 1=does meet profile). Recoding of the values allows binary logistic regression analysis in order to explore the predictive value of social and family variables in English- and Spanish-speaking countries using different reading performance profiles among the students.

Results

In first place, reading performance is the subject of a descriptive and comparative analysis, taking the language variable in that contrast into account. The average results identify reading performance skills on the basis of the adolescents' language, while the ANOVA analysis allows us to analyse the differences in results between countries that are explained by this variable. The reading performance of Spanish-speaking and English-speaking students shows

Table 1
Average descriptive analysis of reading performance and ANOVA of the speech factor of the countries

| | | M | SD | F | Next |
|-------------------|---------|----------|---------|----------|------|
| Item 1 | Spanish | 471,306 | 94,123 | 888,289 | .000 |
| | English | 503,546 | 93,236 | | |
| Item 2 | Spanish | 470,553 | 93,431 | 996,772 | .000 |
| | English | 504,604 | 93,374 | | |
| Item 3 | Spanish | 470,815 | 93,428 | 868,625 | .000 |
| | English | 502,725 | 94,101 | | |
| Item 4 | Spanish | 471,067 | 94,187 | 902,681 | .000 |
| | English | 503,682 | 93,831 | | |
| Item 5 | Spanish | 470,817 | 93,913 | 966,947 | .000 |
| | English | 504,496 | 93,681 | | |
| Item 6 | Spanish | 471,345 | 94,166 | 920,752 | .000 |
| | English | 504,158 | 93,128 | | |
| Item 7 | Spanish | 471,264 | 94,044 | 873,611 | .000 |
| | English | 503,161 | 92,866 | | |
| Item 8 | Spanish | 471,536 | 94,220 | 808,756 | .000 |
| | English | 502,349 | 93,440 | | |
| Item 9 | Spanish | 471,310 | 93,620 | 946,041 | .000 |
| | English | 504,520 | 93,390 | | |
| Item 10 | Spanish | 471,468 | 94,898 | 842,985 | .000 |
| | English | 503,031 | 93,384 | | |
| Total (Summation) | Spanish | 4711,487 | 884,449 | 1016.214 | .000 |
| | English | 5036,276 | 880,239 | | |

significant differences ($p=.0001$). Table 1 shows that English-speaking students achieve better average results on the reading achievement test than Spanish-speaking students do. Differences are significant in each of the reading test items and in the overall score.

In second place, data becomes the subject of discriminant analysis to identify which items classify students on the basis of their language. Thus, the analysis shows to what extent language is relevant in the results of both countries in terms of reading performance. All test items divide students on the basis of language. The canonical discriminant functions show a self-value = .036 a canonical correlation coefficient = .186. and a Wilks' Lambda = .965 (p

= .001). The discriminant function is .190 for English-speaking students and the opposite for Spanish-speaking students (-.190). Table 2 shows the standardised canonical discriminant function coefficients. Items classify between 87% and 96% of the students on the basis of their language. Consequently, language is a differentiating element in reading performance results between countries.

At this point of the data analysis, the differences in the reading performance between English- and Spanish-speaking students and their link with social and family variables are analysed by means of multilevel analysis using linear mixed models. The correlation impact of these variables on reading performance is studied

Table 2
 Language Discriminant Analysis Structure Matrix

| | Function 1 |
|---------|------------|
| Item 2 | .961 |
| Item 5 | .946 |
| Item 9 | .936 |
| Item 6 | .923 |
| Item 4 | .902 |
| Item 1 | .901 |
| Item 7 | .901 |
| Item 3 | .901 |
| Item 10 | .901 |
| Item 8 | .865 |

by establishing different levels of analysis. Thus, the 10 items that measure reading performance and total reading performance (summation) are categorised as dependent variables, level of parental education and parents' occupation as fixed factors, and parents' educational role as covariates. Table 3 shows the corrected models in the multilevel analysis. The three social and family variables determine around 20% of the reading performance of Spanish-speaking students and 15% of the reading performance of English-speaking students.

Finally, the predictive value of social and family variables is analysed in greater depth by means of quartile regression analysis (Table 4). This analysis is aimed at measuring the correlational effects of social and family variables on the basis of different reading performance profiles (established by quartile cuts). Students with optimal reading performance are classified in the first quartile, students with good reading performance in the second, students with average reading performance in the third and students with poor reading performance in the fourth quartile. More specifically, the links between social and family variables and reading performance profiles are analysed by means of binary logistic regression. Therefore, the reading performance profiles are analysed on the basis of the presence or absence of the social and family variables included in the regression.

Table 3
 Predictive value of social and family variables with regard to reading performance in multi-level analysis

| Country | Reading Performance | F | Next | R ² | Adjusted R ² |
|------------------|---------------------|-------|------|----------------|-------------------------|
| Spanish-speaking | Item 1 | 3,489 | .000 | .269 | .192 |
| | Item 2 | 3,363 | .000 | .262 | .184 |
| | Item 3 | 3,621 | .000 | .276 | .200 |
| | Item 4 | 3,544 | .000 | .272 | .195 |
| | Item 5 | 3,532 | .000 | .271 | .195 |
| | Item 6 | 3,410 | .000 | .265 | .187 |
| | Item 7 | 3,548 | .000 | .272 | .196 |
| | Item 8 | 3,491 | .000 | .269 | .192 |
| | Item 9 | 3,509 | .000 | .270 | .193 |
| | Item 10 | 3,484 | .000 | .269 | .192 |
| | Total | 1,607 | .000 | .293 | .218 |
| English-speaking | Item 1 | 2,491 | .000 | .219 | .131 |
| | Item 2 | 2,416 | .000 | .214 | .125 |
| | Item 3 | 2,539 | .000 | .222 | .135 |
| | Item 4 | 2,485 | .000 | .219 | .131 |
| | Item 5 | 2,480 | .000 | .218 | .130 |
| | Item 6 | 2,416 | .000 | .214 | .125 |
| | Item 7 | 2,499 | .000 | .220 | .132 |
| | Item 8 | 2,512 | .000 | .220 | .133 |
| | Item 9 | 2,515 | .000 | .221 | .133 |
| | Item 10 | 2,499 | .000 | .220 | .132 |
| | Total | 2,702 | .000 | .233 | .147 |

The binary logistic regression reveals that the level of parental education is relevant in English- and Spanish-speaking students with an optimal reading performance profile. The reading performance of Spanish-speaking students is predicted by the average level of parental education, and the reading performance of English-speaking students is predicted by the average basic educational level of the mother and by higher educational level of the father (p=.001). The optimal reading performance of English-speaking students is also explained by the educational role of parents (p=.01). More specifically, parents' interest in their children's school activities and educational support have predictive value for the reading performance of these advantaged students. These social and family variables predict optimal reading perfor-

Table 4
 Binary logistic regression between socio-family variables and reading performance

| | Spanish-speaking countries - B (Sig) | | | | English-speaking countries - B (Sig) | | | |
|-------------|--------------------------------------|-----------------|-----------------|-----------------|--------------------------------------|-------------------|--------------------|-------------------|
| | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| MISCED | (.000) | (.116) | (.591) | (.000) | (.000) | (.001) | (.193) | (.000) |
| N | -.062 (.589) | .022 (.848) | -.056 (.619) | .073 (.508) | -.717 (.000) | -.268 (.032) | .090 (.421) | .443 (.000) |
| ISCED 1 | -.311 (.001) | -.128 (.158) | .088 (.305) | .226 (.008) | -.481 (.015) | .074 (.636) | .126 (.399) | .108 (.449) |
| ISCED 2 | -.128 (.077) | .066 (.353) | -.044 (.543) | .085 (.246) | -.404 (.000) | -.112 (.224) | .121 (.162) | .239 (.005) |
| ISCED 3A, 4 | .306 (.000) | .037 (.689) | -.053 (.569) | -.361 (.000) | -.279 (.004) | .003 (.973) | .168 (.052) | .061 (.493) |
| ISCED 5B | -.009 (.891) | .077 (.226) | .035 (.586) | -.112 (.098) | -.099 (.076) | .149 (.007) | .107 (.059) | -.162 (.008) |
| ISCED 5A, 6 | .060 (.407) | .127 (.081) | -.004 (.955) | -.220 (.007) | -.178 (.002) | .112 (.056) | .160 (.008) | -.092 (.160) |
| FISCED | (.000) | (.001) | (.292) | (.000) | (.000) | (.700) | (.000) | (.000) |
| N | -.170 (.067) | -.154 (.103) | -.008 (.932) | .343 (.000) | -.748 (.000) | -.018 (.858) | .201 (.034) | .404 (.000) |
| ISCED 1 | -.671 (.000) | -.330 (.000) | .169 (.042) | .652 (.000) | -.726 (.000) | .113 (.382) | .212 (.096) | .322 (.009) |
| ISCED 2 | -.263 (.000) | -.028 (.691) | .122 (.082) | .191 (.009) | -.691 (.000) | .022 (.780) | .443 (.000) | .203 (.011) |
| ISCED 3A, 4 | .037 (.675) | -.031 (.733) | .052 (.569) | -.062 (.534) | -.366 (.000) | .075 (.395) | .310 (.000) | .069 (.459) |
| ISCED 5B | -.032 (.630) | -.003 (.966) | .030 (.662) | .017 (.814) | -.232 (.000) | .045 (.427) | .249 (.000) | .020 (.746) |
| ISCED 5A, 6 | -.032 (.669) | .043 (.572) | .046 (.560) | -.064 (.452) | -.437 (.000) | .106 (.106) | .251 (.000) | .164 (.023) |
| PM | (.000) | (.818) | (.223) | (.000) | (.000) | (.000) | (.384) | (.000) |
| N | -.531 (.212) | .994 (.109) | -.038 (.936) | -.190 (.676) | 19,489 (1,000) | 19,636 (1,000) | -21,927 (1,000) | 20,656 (1,000) |
| PSE | -.458 (.278) | .952 (.123) | .059 (.900) | -.311 (.492) | 19,786 (1,000) | 19,700 (1,000) | -21,919 (1,000) | 20,435 (1,000) |
| PNB | -.376 (.371) | .971 (.116) | .070 (.881) | -.424 (.347) | 20,074 (1,000) | 20,026 (1,000) | -21,967 (1,000) | 19,833 (1,000) |
| PNM | -.494 (.250) | .931 (.135) | .131 (.783) | -.320 (.487) | 19,847 (1,000) | 19,919 (1,000) | -21,925 (1,000) | 20,199 (1,000) |
| PNA | -.107 (.800) | .963 (.119) | -.062 (.896) | -.648 (.154) | 20,380 (1,000) | 19,937 (1,000) | -22,089 (1,000) | 19,509 (1,000) |
| PNS | -.468 (.275) | 1,005 (.107) | -.050 (.917) | -.230 (.616) | 20,160 (1,000) | 19,880 (1,000) | -21,925 (1,000) | 19,855 (1,000) |
| PI | -.518 (.260) | .835 (.194) | .300 (.548) | -.392 (.420) | 19,666 (1,000) | 19,486 (1,000) | -21,856 (1,000) | 20,618 (1,000) |
| PP | (.129) | (.000) | (.488) | (.000) | (.000) | (.013) | (.002) | (.000) |
| N | .048 (.885) | .077 (.830) | .361 (.335) | -.422 (.179) | -22,247 (1,000) | 20,135 (1,000) | 19,906 (1,000) | 20,101 (1,000) |
| PSE | -.125 (.709) | .154 (.671) | .398 (.289) | -.386 (.220) | -21,934 (1,000) | 20,262 (1,000) | 19,773 (1,000) | 19,937 (1,000) |
| PNB | .015 (.964) | .366 (.306) | .296 (.425) | -.601 (.054) | -21,585 (1,000) | 20,375 (1,000) | 19,798 (1,000) | 19,411 (1,000) |
| PNM | -.084 (.801) | .278 (.443) | .416 (.268) | -.531 (.094) | -21,836 (1,000) | 20,335 (1,000) | 19,893 (1,000) | 19,663 (1,000) |

| | | | | | | | | |
|----------|-----------------|------------------|------------------|-----------------|--------------------|-------------------|-------------------|-------------------|
| PNA | .141 (.672) | .289 (.425) | .378 (.316) | -.802 (.012) | -21,284 (1,000) | 20,406 (1,000) | 19,643 (1,000) | 18,879 (1,000) |
| PNS | .061 (.855) | .269 (.458) | .381 (.311) | -.648 (.042) | -21,464 (1,000) | 20,420 (1,000) | 19,668 (1,000) | 19,302 (1,000) |
| PI | .096 (.789) | .333 (.388) | .356 (.372) | -.699 (.043) | -21,791 (1,000) | 20,200 (1,000) | 19,533 (1,000) | 20,081 (1,000) |
| RE1 | -.048 (.647) | -.058 (.570) | .056 (.582) | .048 (.639) | -.352 (.002) | -.261 (.013) | -.096 (.343) | .584 (.000) |
| RE2 | .067 (.508) | .072 (.469) | -.271 (.008) | .137 (.174) | -.346 (.017) | .105 (.424) | .147 (.267) | .061 (.643) |
| RE3 | -.035 (.690) | .019 (.821) | .085 (.319) | -.073 (.407) | .252 (.008) | .130 (.161) | -.177 (.065) | -.193 (.048) |
| RE4 | -.011 (.893) | .032 (.689) | .059 (.463) | -.085 (.313) | .110 (.294) | -.039 (.701) | -.036 (.727) | -.012 (.907) |
| Constant | -.540 (.303) | -2,322 (.001) | -1,526 (.010) | -.341 (.526) | 1,140 (1,000) | -41,351 (.999) | .764 (1,000) | -41,094 (.999) |

Note: N = None, not reached, not applicable, not valid and not answered; MP = Mother's occupation; PSE = Non-specialised occupations; GNP = Basic-level occupations (workers); MNP = Medium-level occupations (technicians); HLP = High-level occupations (university education); HLP = Higher-level occupations (managers); IP = Inactive occupations (unemployed, retired and students); PP = Father's occupation; SR1 = educational role of parents in interest in activities; SR2 = educational role of parents in support to educational efforts and achievements; SR3 = educational role of parents in support to difficulties at school; SR4 = educational role of parents in encouraging adolescents to be self-confident.

mance with an R^2 between .022 and .032 (Cox and Snell R-square, and Nagelkerke R-square, respectively) for Spanish-speaking students and with an R^2 between .077 and .114 for English-speaking students ($p=.001$ in the omnibus tests; WaldHE $\chi^2=3187.9$; WaldHI $\chi^2=3185.7$).

The input variables in the regression equation are fewer, when taking into account the results of the reading performance of students in the second quartile, than those found in the prediction of the reading performance of the first quartile. The elementary educational level of the parents is relevant in Spanish-speaking students with good reading performance ($p=.001$); while the higher educational level of the mothers predicts good reading performance in English-speaking students ($p=.01$). Furthermore, the sample of interest of parents in the school activities of their children obtains predictive value for the good reading performance of the English-speaking students ($p=.01$). These variables predict optimal reading performance for an R^2 between .006 and .010 (Cox and Snell R-square, and Nagelkerke R-square, respectively) for Spanish-speaking students and for an

R^2 between .010 and .015 for English-speaking students ($p=.001$ in the omnibus tests; WaldHE $\chi^2=3219.6$; WaldHI $\chi^2=3241.2$).

The predictive value of social and family variables is also reduced in the prediction of the average results of reading performance. The average reading performance of Spanish-speaking students is only predicted by the educational role of parents in recognising the efforts and achievements of their children in the school environment. In contrast, the average reading performance of English-speaking students is predicted by the mothers' higher education level ($p=.01$) and the fathers' higher education level ($p=.001$). These variables predict the average reading performance for an R^2 between .003 and .004 (Cox and Snell R-square, and Nagelkerke R-square, respectively) for Spanish-speaking students and for an R^2 between .011 and .017 for English-speaking students ($p=.001$ in the bus tests; WaldHE $\chi^2=3205.3$; WaldHI $\chi^2=3277.7$).

Finally, the impact of social and family variables on the profile of poor reading performance is analysed. The results of these students

are predicted by different social and family variables. Poor performance of English- and Spanish-speaking students is predicted by the elementary educational level of their parents ($p=.001$). However, the higher educational level of the parents of English-speaking students also has a predictive value for the reading performance of their children ($p=.01$). Spanish-speaking students with poor performance have parents with high professional qualifications ($p=.01$) and English-speaking students have parents interested in their academic performance ($p=.001$). These variables predict optimal reading performance for an R^2 between .010 and .015 (Cox and Snell R-square, and Nagelkerke R-square, respectively) for Spanish-speaking students and with an R^2 between .080 and .119 for English-speaking students ($p=.001$) in the bus tests; WaldHE $\chi^2=3491.8$; WaldHI $\chi^2=3474.7$.

Discussion

The contribution of the prediction of social and family variables amounts approximately to 20% (in Spanish-speaking countries) and 15% (in English-speaking countries) of the variability of reading performance. There are no significant or relevant differences between the countries analysed in a comparative manner and, in both English- and Spanish-speaking countries, the greatest impact on reading results is the result of the average level of parental education and the sample of interest of the parents in school activities and educational support to their children.

These results are in line with different studies that show that the social and family context explains between 14% and 33% of the variance in the academic results of students (Freeman & Viarengo, 2014). Likewise, in-depth analysis of the predictive value of social and family variables allows us to detect that the reading performance of students is mainly explained by the level of parental education. Likewise, the educational role of parents, referring to the interest in their children's educational activities, has a predictive value with regard to their children's poor reading performance. These results also support

other research showing that the level of parental education increases the expectation of school success for their children (Bjorklund & Salvanes, 2010) along with a high level of income.

The interest of parents, as well as their participation and support at home in their children's school activities, is positively related to the results of students in both types of countries, as also shown in other studies (Bourdieu, 1986; Coleman, 1988; Schoon & Parsons, 2002). A link has also been identified between the level of parental education and the academic performance of students, mainly because parents with higher levels of education foster richer family and cultural environments (Plomin, 1997). As a matter of fact, the level of parental education is a determining factor in the academic performance of students. For example, a longitudinal study by Duncan & Brooks-Gunn (1997) concluded that maternal education was significantly linked to the academic performance of students even though it was controlled by a series of family SES factors.

The results of this study also confirm other longitudinal studies of international reference (Blau & Duncan, 1967; Duncan, Featherman & Duncan, 1972) that show that the family SES has a positive or negative impact mainly on the last years of adolescence and the first years of maturity (Sobolewski & Amato, 2005; Whitson & Keller, 2004). With regard to reading development, family influence is deemed to help to create cognitive maps, values and beliefs that endure over time and to help interpret and contextualise what is read (Anderson & Huesmann, 2003). This is especially relevant for the development of reading literacy, which is built and perfected over time. According to Eccles (Eccles, Life & Barber, 2004), this cognitive process can lead to higher expectations of study success in students.

Conclusions

The results of this research show that the level of parental education, the occupation and

educational role of parents predict around 20% (in Spanish-speaking countries) and 15% (in English-speaking countries) of the variability in reading performance. Likewise, the level of parental education predicts the poor and optimal reading performance of students in the two types of countries analysed. According to the results of this study, school success and reading performance do not seem to be conditioned by the socio-economic and environmental variables of the family unit, as variability rates are similar between English and Spanish-speaking countries with different socio-cultural contexts and geographically located in different continents.

This type of evidence is an important contribution to understand the variability and differences in the academic results of students and to implement educational policies and actions that seek to improve these results by operating on indicators that have a negative impact on reading results. In this regard, other variables that are likely to have a great impact on academic performance, such as the school's available resources, expenditure on education, the number of students per class, or the quality of teachers, need to be analysed in greater depth. The ability to determine these aspects in a given context helps to establish a judicious education policy that supports and backs up social and family circumstances that can have a significant impact on the academic performance of adolescents.

Limitations

The major limitation of this study is that the existence of any potential translation or cultural biases has not been analysed. In this sense, some studies have shown that PISA tests contain reagents that are deemed to include serious errors that condition measurement validity (Solano-Flores & Milbourn, 2016). In this paper, we believe this issue was solved in the PISA 2015

test, since international contractors and participating countries and economies reviewed questions in order to avoid the presence of cultural biases and prejudices (Ministry of Education and Vocational Training, 2015). However, there may be some invisible cultural biases that result in variations in the results obtained.

On the other hand, this study has not addressed issues related to the subjective social value of education, that is, the influence of the perception of students, families and teachers on reading performance, the importance of education as a dimension for the comprehensive development of individuals (Sancho, Jornet & Perales, 2014). New studies in this line are needed to analyse to what extent the subjective social value interacts in the relationship between the average level of parental education, the sample of interest of the parents in school activities, the educational support to their children and the reading performance of adolescents.

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