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Determinants of book reading and library attendance in Colombia. A microeconomic approach

María Luisa Palma*

Department of Economics and Economic History, University of Seville, Spain.

E-mail: mpalma@us.es

Luis F. Aguado

Department of Economics, Pontificia Universidad Javeriana, Seccional Cali, Colombia.

E-mail: lfaguado@javerianacali.edu.co.

Ana María Osorio

Department of Economics, Pontificia Universidad Javeriana, Seccional Cali, Colombia.

E-mail: anao@javerianacali.edu.co

ABSTRACT The article explores the determinants of the decision to read books and visit libraries in a developing country, Colombia, based on data from the *Encuesta de Consumo Cultural 2008 [Cultural Consumption Survey] (ECC2008)*. For this purpose, multilevel logistic regressions are estimated, results showing that a high level of education and a greater socioeconomic status have a positive and significant effect on the decision to read, whereas socioeconomic status does not prove significant vis-à-vis library visits. Moreover, the VPC (Variance Partition Coefficient), 5.33% (6.58%) of the residual variation in the propensity to read at least one book (visit a library) can be attributed to unobserved features of the neighbourhood. Introducing explanatory and contextual proxy variables, at neighbourhood level, such as higher educational attainment, access to information, and access to cultural infrastructure, reduces VPC although unobserved contextual features remain which influence the two participation decisions analysed.

Keywords: cultural participation, reading habits, library attendance, multilevel logistic models, Colombia.

JEL Classification Codes: Z110, D120, C250.

* Corresponding author: Department of Economics and Economic History, Faculty of Economics, University of Seville, Spain.
Ramón y Cajal 1, 41018, Sevilla, Spain.
Phone: +34 954557534
Fax: +34 954 556068
E-mail: mpalma@us.es

1 Introduction

The latest CERLALC–UNESCO (2013) report on book reading in Latin America reveals that between 2010 and 2012 the percentage of the population over the age of 12 who read books in Colombia fell from 55.3% to 47.7%. In addition, the percentage of people over the age of 12 who went to libraries was 14%. Of this figure, 45.1% went to public libraries. It is worth highlighting that the main reason was to read books, newspapers, and magazines, followed by taking out books on loan, and using computers and the Internet. These data confirm the interest in exploring the determinants of book reading and library visits in a developing country such as Colombia that has a low reading rate which, moreover, is falling. The data also underpin the importance of investigating library attendance and the reasons underlying these low rates of cultural participation. Such inquiry may serve as the basis for implementing public policies aimed at boosting the activities mentioned.

Exploring the determinants behind book reading and library attendance constitutes an interesting case study, firstly because these activities are perhaps the most basic means of engaging in culture (Fernández–Blanco and Prieto–Rodríguez 2009), and secondly because they have received little attention from the viewpoint of participation determinants (Amez 2010; Gray 2003).

Within the theoretical framework of cultural economics, the cultural good experience derived from reading a book or visiting a library may be described as a leisure good in the sense proposed by Becker (1965). Individuals ‘produce’ this good through a domestic production function involving the purchase of market goods –the book–, the time devoted to reading, and the time individuals spend developing refining their tastes (Stigler and Becker 1977; Levy–Garboua and Montmarquette 1996). Thus, the determinants of an individual’s decision with regard to their consumption/participation depend as much on preferences, evidenced through the utility function, as on technology, reflected in the domestic production function.

From the standpoint of consumption/participation, both book reading and visiting libraries are characterised by being time-intensive leisure goods. However, they do evidence differences. Book reading is essentially an individual act that may be engaged in either at home or outdoors and which may be fragmented over time, throughout the day or the week. Visiting libraries offers less chance of fragmentation over time as it generally entails having to leave the house, involves a high degree of social interaction linked to a social activity characteristic of public places, and may pursue objectives other than actually reading (inquiring into a given topic, attending a literary exhibition).

The available empirical literature addressing the topic in the field of cultural economics remains scarce and has mainly focused on the use of temporal series to estimate demand elasticities for books (Billintmayer 1992; Hjorth–Andersen 2000; Prieto–Rodríguez et al. 2005; Ringstand and Loyland 2006; Palma et al. 2009) or, in the case of Spain, on participation studies analysing the purchase of and spending on books and periodicals, such as the works conducted by Escardíbul and Villarroya (2009) and Villarroya and Escardíbul (2010) or on exploring the factors influencing the decision to read and reading frequency Fernández–Blanco and Prieto–Rodríguez (2009), a work which ties in more closely with the present study.

The literature remains even scarcer in the case of developing countries. In the case of Colombia, prominent studies include those by Parra and Corzo (2008) analysing the impact of the National Reading and Libraries Plan on the number of books read in Colombia, or López (2008) who explores the individual features determining the number of books read, or the work of Muñoz–Cáceres (2012) analysing reading behaviour in Chile, in addition to the descriptive studies into reader behaviour and reading habits published by CERLAC-UNESCO (2013), or Gamboa and Reina (2006) for the Colombian Book Chamber.

Adopting the typology introduced by Seaman (2006), the aforementioned literature addressing determinants of the demand for books corresponds to type A studies. In other words, they are based on aggregate population data which allows for the measure of book prices and substitute goods to be included, and which offers the closest approach to estimating well specified demand

functions. Escardíbul and Villarroya (2009) and Villarroya and Escardíbul (2010), Fernández-Blanco and Prieto-Rodríguez (2009), Parra and Corzo (2008) and López (2008) estimate type P models in which they use specific information and characteristics for each individual that provide a more in-depth insight into the effects of determinants of participation/consumption.

The main aim of the present article is to explore the determinants of the decision to read books or attend libraries in Colombia based on data from the *2008 Cultural Consumption Survey* (hereinafter *ECC2008*) drawn up by the National administrative Department of Statistics (DANE). Given the dichotomous nature of the variables of interest and the hierarchical structure of the *ECC2008*, multilevel logistic regressions are estimated so as to ascertain the impact of individual, family, and neighbourhood features on the two decisions. The neighbourhood constitutes the closest context an individual is exposed to and may influence residents in a number of ways, such as through the social interactions generated therein, the geographical location, as well as access to services and opportunities (Galster 2012).

The principal hypothesis to be tested is that despite being a developing country which has a low reading rate and a high income imbalance, the factors influencing the decision to read and attend libraries do not differ substantially from those found in developed countries.

The paper contributes to the empirical literature addressing cultural participation in two ways: firstly by providing an analysis of the decision to read and attend libraries, thus far absent from studies into developing countries, as is the case of Colombia, and secondly due to the use of variables to capture the effect which individuals' environment (neighbourhood) has on the decision to read and visit libraries as explanatory variables, using multilevel models. This heralds an innovation in methodological terms with regard to previous studies (Fernandez-Blanco and Prieto-Rodríguez 2009; Parra and Corzo 2008; López 2008).

The findings to emerge from the models estimated are useful for implementing cultural policies aimed at boosting citizens' reading rates and access to libraries within the framework of the *National Reading and Libraries Plan (2003–2010)*. The article is organised in sections. Section

two presents the *ECC2008* and the estimation methods. Section three discusses the findings, while the final section presents the main conclusions.

2 Data and Methods

The *ECC2008* provides a description of the cultural activities and behaviour of persons over the age of five in Colombia. The sample is representative at a national scale, employs a three-stage probabilistic sample design stratified at the first stage, and covers 37,381 individuals who live in the municipal capitals of 68 municipalities. In order to reflect the role of context, the sample was restricted to those over the age of 11 who lived in the country's four main cities (Bogota D.C, Medellin, Cali, and Barranquilla)¹, and who, in the week prior to when the study was carried out, were engaged in their usual activities. Moreover, in the case of book reading, only those who stated they read for pleasure were included, which reduced the sample to 8,660 individuals.

The “sector” variable was used as a proxy of the neighbourhood, in other words the nearest context to which individuals are exposed and which might affect their decision to read or go to a library. The sample included 171 sectors (hereinafter referred to as neighbourhoods). In line with the *ECC2008*, a sector is generally equal to a neighbourhood comprising between one and nine sections, made up of approximately 20 adjacent blocks belonging to the same sector (DANE 2008).

Multilevel models allow us to take account of the hierarchical structure of the data and explore inter- and intra-group variations (Steele 2008) in addition to analysing variables at various levels simultaneously (Hox 2010). The article estimates two-level logistic regression models, with 8,660 individuals in 171 neighbourhoods, adopting the following general specification:

¹ Information from the 2005 National Population Census indicates that the four cities represent 38.4% of the country's population located in municipal capitals. In addition, the GDP generated in the respective metropolitan areas accounts for 52.4% of domestic GDP (DANE 2013).

$$\log[\pi_{ij}] = \log\left[\frac{\pi_{ij}}{1-\pi_{ij}}\right] = \beta_0 + \beta_{p0}X_{pij} + \beta_{pq}Z_{qj} + \beta_{pq}Z_{qj}X_{pij} + u_j \quad [1]$$

where π_{ij} is the probability that the event will occur (in this case reading a book or visiting a library), X_{ij} is a vector of P explanatory variables $p(p = 1 \dots P)$ at the individual level, Z_j is a vector of Q explanatory variables $q(q = 1 \dots Q)$ at the neighbourhood level, Z_jX_{ij} indicates the cross-level interactions between neighbourhood-level variables and those individual-level variables, β_0 , β_i and β_m are the commonly estimated regression coefficients, and u_j are the neighbourhood level residuals, assumed to be distributed normally with a mean μ of zero and variance σ_u^2 . Table 1 shows the dependent and explanatory variables used, and Table 2 contains the descriptive statistics of the sample.

Reading books not related to the individual's profession or studies (reading for pleasure), and visits to libraries were chosen as dependent variables. As regards the explanatory variables, we included the usual socioeconomic variables (age, sex, marital status, race, and socioeconomic status as proxies of income) as well as those which determine accumulated cultural capital (educational attainment and passive participation in various cultural activities), aiming to control for individuals' preferences and the financial limitations they are subject to. Also included were variables determining time-related restrictions together with those shaping the decision to read and visit libraries since the latter are both time-intensive goods (available free time from Monday to Friday and weekends, as well as children in the household under the age of five).

In order to capture the effect of the neighbourhood features which impact the individual's decision to read books and visit libraries, three variables are included: [i.] residents of the neighbourhood with technical or higher education qualifications (Neigh_edu); [ii.] residents of the neighbourhood who read newspapers at least once a week (Access_info), and [iii.] residents of the neighbourhood who answered "it is too far away" to questions concerning why they did not visit museums, cultural centres, and performing arts (theatre, dance, and opera)

(Cultu_infras). The aforementioned variables were constructed as percentages thereof at an individual level.

The *Neigh_edu* and *Access_info* variables are included as proxies to reflect possible externalities of education and the ‘information processing capacity’ of others living in the neighbourhood vis-à-vis the individual tendency to read books or visit libraries (Torche 2007; Chan and Goldthorpe 2007). In this case, education and reading newspapers, not only one’s own but also neighbours’, act as a public good in the individual formation of tastes for reading and visiting libraries. The variable *Cultu_infras* seeks to explain the effect of the availability of physical cultural infrastructure in the neighbourhood on the variables of interest.

Table 1. Definition of variables

Variable	Description	Typology
<i>Dependent variables</i>		
<i>Book reading</i>	Have you read books over the last twelve months?	<i>D</i> 1= yes ; 0=No
<i>Library attendance</i>	Have you been to a library over the last twelve months?	<i>D</i> 1= yes ; 0=No
<i>Explanatory individual-level variables</i>		
<i>Personal features</i>		
<i>age</i>	Age in years	<i>C</i> Number of years
<i>age2</i>	Age squared	<i>C</i> Number of years
<i>men</i>	Male	<i>D</i> 1= Male ; 0= Female
<i>Mixed variables</i>		
<i>single</i>	Single	<i>D</i> 1= yes ; 0=No
<i>married</i>	Married/civil partnership	<i>D</i> 1= yes; 0=No
<i>wid-div</i>	Widowed+divorced	<i>D</i> 1= yes ; 0=No
<i>black</i>	Describe themselves as being of African descent	<i>D</i> 1=yes ; 0=No
<i>Accumulated cultural capital</i>		
<i>educlev</i>	Level of education.	<i>O</i> 1= (None) ; 2= (Pre-school-Basic) ; 3= (Secondary) ; 4= (Technical-Technological) ; 5= (University+Postgraduate)

<i>Passive cultural participation</i>	Have you taken part in cultural activity courses or workshops?	<i>D</i>	1= yes ; 0=No
<u><i>socioeconomic status</i></u>			
<i>ses</i>	Socio-economic status/1.	<i>O</i>	1= (Low) ; 2 = (Middle) ; 3 = (High)
<u><i>Time restrictions</i></u>			
<i>leisuremf</i>	Hours available for free-time activities from Monday to Friday.	<i>C</i>	Number of hours
<i>leisures</i>	Hours available for free-time activities from Saturday to Sunday.	<i>C</i>	Number of hours
<i>child5</i>	Children under five in the household	<i>D</i>	1= yes ; 0=No
<u><i>Others</i></u>			
<i>place</i>	Place where the survey was conducted (<i>Bogota; Medellin, Cali, Barranquilla</i>)	<i>D</i>	1= Yes ; 0=No
<i>newspapers</i>	Did you read newspapers once a week in the last month?	<i>D</i>	1= Yes ; 0=No
<u><i>Explanatory neighbourhood-level variables</i></u>			
<i>Neigh_edu</i>	Proportion of individuals with technical or higher education at the neighbourhood.	<i>C</i>	
<i>Access_info</i>	Proportion of individuals reporting reading newspapers once a week in the last month, at the neighbourhood.	<i>C</i>	
<i>Cultu_infras</i>	Proportion of individuals reporting no attendance to museums, cultural centres, theatre, dance or opera because are too far, at the neighbourhood.	<i>C</i>	

/1. In this case, socioeconomic level or status is measured through a proxy variable of wealth. In Colombia, the socioeconomic stratification of dwellings is used as a basis for the levying of certain taxes or fees charged for certain public services provided for those dwellings. This is based on a series of parameters related to the physical features of the dwelling and the place or neighbourhood where it is located. Dwellings are classified into six groups; group 1 corresponding to the lowest level, and group 6 to the highest. For the purposes of estimating the models, these have been divided into three groups: groups 1 and 2 are the lowest level; groups 2 and 3 are the middle level, and groups 5 and 6 are the highest level.

Table 2. Descriptives of the variables

<i>Individual-level variables</i>	Mean/ Proportion	SD	Min	Max
Age (year)	39.54	16.79	12	100
Male	0.45	0.50	0	1
Marital status				
Single	0.35	0.48	0	1
Married/Civil partnership	0.52	0.50	0	1
Separated/Widowed	0.13	0.33	0	1
Black	0.06	0.23	0	1
Educational attainment				
None	0.01	0.07	0	1
Pre-school/Basic	0.24	0.43	0	1
Secondary	0.48	0.50	0	1

Technical	0.10	0.31	0	1
University/Postgraduate	0.17	0.37	0	1
Passive cultural participation	0.18	0.39	0	1
Socioeconomic status				
Low	0.48	0.50	0	1
Middle	0.46	0.50	0	1
High	0.06	0.24	0	1
Leisure hours (Monday-Friday)	10.31	10.29	0	80
Leisure hours (Saturday-Sunday)	7.46	6.20	0	40
Children <5 years of age in the household	0.36	0.73	0	8
City of residence				
Bogotá	0.54	0.50	0	1
Medellin	0.17	0.38	0	1
Cali	0.19	0.39	0	1
Barranquilla	0.10	0.30	0	1
Read a newspaper once a week	0.19	0.39	0	1
<i>Neighbourhood-level variables</i>				
% of individuals with technical/higher education.	0.27	0.21	0	1
% of individuals reporting reading newspapers once a week.	0.19	0.09	0	1
% of individuals reporting no attendance museums/cultural centres/ theatre/dance/opera because they are too far.	0.13	0.13	0	0.55

3 Results

Table 3 shows that the main reason stated by individuals for not reading a book or visiting a library over the previous twelve months was lack of interest, 63.6% and 60.5% respectively, a reason that was twice as common as lack of time (34.5% and 29.2%). The first motive might be linked to individuals' preferences, since their cultural capital consumption might be focused on other cultural activities. The second reason might be related to socioeconomic determinants, in this instance the twin barrier they face in terms of time and money.

Table 3. Reasons for not reading and not attending libraries

	Reasons for which subjects did not:	
	read books	attend libraries
Lack of time	34.5%	29.2%
Lack of interest/don't like it	63.6%	60.5%
Library too far away	1.4%	11.0%
Lack of money	5.6%	7.9%

Table 4 displays the profile of non–book readers and non–visitors to libraries. These tend to be married people averaging 41 years of age, with a level of educational attainment below secondary and who are from a low socioeconomic status. There are also significant differences between those who read and those who do not (go to libraries and do not) in most of the sociodemographic variables analysed.

Table 4. Profiles of readers and library visitors

	Book reading			Library attendance		
	Readers (N=4033)	Non-readers (N=4627)	Mean differences test	Library attendance (N=1741)	Non- attendance at libraries (N=6919)	Mean differences test
Age (years)	37.90	40.97	***	30.01	41.94	***
Male	0.42	0.48	***	0.42	0.46	**
Marital status						
Single	0.41	0.3	***	0.63	0.28	***
Married/Civil partnership	0.46	0.57	***	0.31	0.57	***
Separated/Widowed	0.12	0.13	***	0.06	0.14	***
Educational attainment						
None	0.00	0.01	***	0	0.01	***
Primary/Basic	0.14	0.33	***	0.11	0.28	***
Secondary	0.44	0.51	***	0.41	0.49	***
Technical	0.14	0.08	***	0.12	0.1	***
University/Postgraduate	0.28	0.07	***	0.36	0.12	***
Socioeconomic status						
Low	0.39	0.55	***	0.41	0.49	***
Middle	0.52	0.42	**	0.49	0.46	***
High	0.09	0.03	***	0.09	0.05	***
City of residence						
Bogota	0.55	0.53	***	0.59	0.53	***
Medellin	0.18	0.16		0.24	0.16	***
Cali	0.16	0.21	***	0.09	0.21	***
Barranquilla	0.11	0.1		0.08	0.11	***
Neighbourhood characteristics						
% of individuals with technical or higher education at the neighbourhood.	0.33	0.22	***	0.33	0.26	***
% of individuals reporting reading newspapers once a week at the neighbourhood.	0.20	0.18	***	0.21	0.19	***
% of individuals reporting no attendance to museums, cultural centres, theatre, dance or opera because are too far, at the neighbourhood.	0.12	0.14	**	0.14	0.13	**

*p<0.1, **p<0.05, ***p<0.001

Tables 5 and 6 show the estimation results of the two multilevel logistic models for the determinants of book reading (model 1a) and library attendance (model 2a). Broadly speaking, the results agree with those obtained in other previous studies for Colombia (Parra and Corzo 2008) and Spain (Fernández–Blanco and Prieto–Rodríguez 2009). The odds ratio for age and age squared indicate that the younger the individuals are, the less likely they are to read or attend libraries. However, after a certain age, individuals are equally likely to read or visit libraries or not. Males are approximately 24% less likely to read books (attend libraries) than females. As regards marital status, those who are married are less likely (23.5%) to read compared to those who are single. As regards visiting libraries, in addition to being married, being separated or

widowed also reduces the likelihood of going compared to being single, bearing out the notion that fewer family responsibilities aided interviewees' consumption of time-intensive cultural products such as reading or going to libraries.

Having completed post-secondary level education increases both the propensity to read and to go to libraries. By way of an example, compared to those who have no qualifications, those who have a university degree are 11.13 times more likely to read books and 28.27 times more likely to visit libraries, evidencing the fact that education increases the likelihood of consuming cultural products and holding true for both activities, in line with numerous international studies². Passive cultural participation positively affects the probability of reading books and going to libraries, evidencing the complementary nature of book reading and visiting libraries with the consumption of other cultural activities, supporting the notion of an omnivorous consumer in line with the findings reported by Fernández-Blanco and Prieto-Rodríguez (2009). In contrast, socioeconomic status only seems to affect the propensity to read books. Individuals from middle and high levels are approximately 1.3 and 1.8 times more likely, respectively, to read books than those from the lowest level. In addition, declaring oneself to be of negro origin only affects visits to libraries.

Available leisure time at weekends has a limited impact on the two activities, whereas the presence of children under the age of five in the household reduces the probability of reading books by 20%, and attending libraries by 36%, again reflecting the time-intensive nature of the goods analysed and the reduction in their consumption resulting from the high opportunity costs in time. Finally, living in Cali reduces the propensity to read books by almost 19% compared to living in Bogota. Compared to Bogota, the propensity to visit libraries is greater in Medellin (1.5 times greater) and less in Cali and Barranquilla (53% and 45% less likely, respectively). As regards the contextual effect, in terms of VPC, 5.33% (6.58%) of the residual variation in the propensity to read at least one book (visit a library) can be attributed to unobserved features of the neighbourhood.

² Seaman (2006) offers a general review of participation studies.

The findings to emerge from the multilevel models suggest that in addition to the influence of individual and family traits, there are key neighbourhood related factors which can influence book reading and library visiting habits. The neighbourhood might have a bearing on individuals' behaviour, either through geographical location or the social interactions generated therein.

When including variables reflecting the characteristics of the individual's context in the models, results indicate that in addition to education, a higher educational level amongst others in the neighbourhood increases the likelihood of reading books for pleasure. It therefore bears out the positive externalities of others' education in the neighbourhood context. Likewise, reading newspapers and having greater access to information at a neighbourhood level, measured through *Access_info*, increases the likelihood of reading books and visiting libraries. As a result, it would seem that those who read newspapers are also more likely to read books. When including this variable in model 1c (table 5) of book reading, high socioeconomic status begins to emerge as statistically significant while the medium status ceases to be so, indicating the increased explanatory capacity of variables linked to income (education, reading newspapers) which are characteristic of a situation of high inequality. Models 1d and 2d include reading newspapers at an individual level so as to confirm the contextual effect of access to information. Once again, positive spillovers might be considered.

Interactions between neighbourhood level variables and individual level variables were tested under the idea that linking some of the characteristics inherent to the individual with our two variables of interest might be influenced by neighbourhood features. For instance, it seems feasible that the contextual effect of the educational level of other people in the neighbourhood is not the same depending on socioeconomic status or age group. Nevertheless, neither of these interactions proved to be statistically significant³.

Finally, the lower propensity to go to libraries amongst individuals who declare themselves to be negro might reflect the influence of the poorer environment in which they live in Colombia (Vivas 2011). This bears out the importance of libraries as a key cultural facility in the

community, since visits thereto are not linked to socioeconomic status, and it thus provides evidence of the need for public investment programmes in libraries in the National Reading and Libraries Plan (PNLB).

The fall in VPC when introducing the variables which capture the effect of the context at neighbourhood level evidences VPC's contribution to explaining the decision to read and visit libraries in terms of the neighbourhood variability. Nevertheless, there remain neighbourhood features that are unexplained by the model and which might be linked to book reading and visiting libraries.

³ The results are available to researchers upon request from the authors.

Table 5. Determinants of book reading

Dependent variable	Multilevel Logit for Book reading							
	Model 1a		Model 1b		Model 1c		Model 1d	
	Individual charact		edu_neighb		edu_neigh+info_access+ cultu_infras		edu_neigh+info_access at indiv and neighb	
	OR	CI	OR	CI	OR	CI	OR	CI
<i>Individual-level variables</i>								
Age (year)	0.976***	[0.96,0.99]	0.976***	[0.96,0.99]	0.976***	[0.96,0.99]	0.974***	[0.96,0.99]
Age^2	1.000**	[1.00,1.00]	1.000**	[1.00,1.00]	1.000**	[1.00,1.00]	1.000**	[1.00,1.00]
Male	0.761***	[0.69,0.84]	0.763***	[0.69,0.84]	0.761***	[0.69,0.84]	0.749***	[0.68,0.83]
Marital status (ref: single)	
Married/Civil partnership	0.765***	[0.67,0.87]	0.766***	[0.67,0.87]	0.765***	[0.67,0.87]	0.756***	[0.67,0.86]
Separated/Widowed	0.916	[0.76,1.10]	0.916	[0.76,1.10]	0.917	[0.76,1.10]	0.893	[0.74,1.07]
Negro	0.977	[0.78,1.22]	0.979	[0.78,1.22]	0.976	[0.78,1.22]	0.992	[0.79,1.24]
Educational attainment (ref: none)	
Pre-school/Basic	1.512	[0.73,3.14]	1.488	[0.72,3.09]	1.446	[0.70,3.01]	1.438	[0.69,3.00]
Secondary	2.833**	[1.36,5.90]	2.738**	[1.32,5.70]	2.666**	[1.28,5.55]	2.612**	[1.25,5.45]
Technical	5.349***	[2.54,11.27]	5.080***	[2.41,10.70]	4.945***	[2.35,10.42]	4.780***	[2.26,10.11]
University/Postgraduate	11.13***	[5.27,23.49]	10.23***	[4.84,21.62]	9.931***	[4.70,20.99]	9.798***	[4.62,20.78]
Passive cultural participation	2.210***	[1.94,2.52]	2.199***	[1.93,2.50]	2.192***	[1.93,2.49]	2.182***	[1.92,2.48]
Socioeconomic status (ref: low)	
Middle	1.287***	[1.11,1.50]	1.154*	[0.98,1.36]	1.135	[0.97,1.33]	1.129	[0.96,1.33]
High	1.818***	[1.29,2.56]	1.322	[0.88,1.98]	1.497**	[1.01,2.21]	1.477*	[1.00,2.19]
Leisure hours (Monday-Friday)	1.007**	[1.00,1.01]	1.007**	[1.00,1.01]	1.007**	[1.00,1.01]	1.007**	[1.00,1.01]
Leisure hours (Saturday-Sunday)	0.994	[0.98,1.00]	0.994	[0.98,1.00]	0.995	[0.98,1.00]	0.995	[0.98,1.01]
Children <5 years of age in the household	0.804***	[0.71,0.90]	0.810***	[0.72,0.91]	0.802***	[0.71,0.90]	0.802***	[0.71,0.90]
City of residence (ref: Bogota D.C)	
Medellin	1.039	[0.82,1.32]	1.109	[0.87,1.41]	1.032	[0.82,1.30]	1.042	[0.83,1.31]
Cali	0.813*	[0.65,1.01]	0.879	[0.70,1.10]	0.874	[0.69,1.10]	0.891	[0.72,1.10]
Barranquilla	0.98	[0.73,1.32]	0.957	[0.71,1.28]	1.144	[0.86,1.53]	1.148	[0.86,1.53]
Read newspaper once a week							1.543***	[1.36,1.74]
<i>Neighbourhood-level variables</i>								
% of individuals with technical/higher education.			2.036**	[1.24,3.34]	1.615*		1.687**	[1.04,2.74]
% of individuals reporting reading newspapers once a week.					7.460***		4.930***	[2.04,11.93]
% of individuals reporting no attendance at museums/cultural centres/ theatre/dance/opera because are too far.					0.89			
N	8660		8660		8660		8660	
Log likelihood	-5187.8204		-5183.886		-5174.16		-5150.098	
Prob > chi2=0.0000								
Wald chi2(19)	947.11		951.2		984.27		1015.85	
Neighbourhood variance	0.1858***		0.1761***		0.1421***		0.1438***	
VPC (Variance Partition Coefficient)	5.33%		5.08%		4.14%		4.19%	

OR: Odds Ratio, CI: 95% confidence intervals in square brackets

*p<0.1, **p<0.05, ***p<0.001

VPC: Proportion of total variance due to differences between neighbourhoods

Table 6. Determinants of Library attendance

Dependent variable	Multilevel Logit for Library attendance							
	Model 2a		Model 2b		Model 2c		Model 2d	
	Individual charact		edu_neighb		edu_neigh+info_access+ cultu_infras		edu_neigh+info_access at indiv and neighb	
	OR	CI	OR	CI	OR	CI	OR	CI
<i>Individual-level variables</i>								
Age (year)	0.860***	[0.84,0.88]	0.860***	[0.84,0.88]	0.860***	[0.84,0.88]	0.859***	[0.84,0.88]
Age^2	1.001***	[1.00,1.00]	1.001***	[1.00,1.00]	1.001***	[1.00,1.00]	1.001***	[1.00,1.00]
Male	0.765***	[0.67,0.87]	0.766***	[0.67,0.87]	0.763***	[0.67,0.87]	0.758***	[0.67,0.86]
Marital status (ref: single)								
Married/Civil partnership	0.659***	[0.56,0.78]	0.660***	[0.56,0.78]	0.660***	[0.56,0.78]	0.653***	[0.55,0.77]
Separated/Widowed	0.693**	[0.53,0.91]	0.693**	[0.53,0.91]	0.691**	[0.53,0.90]	0.674**	[0.52,0.88]
Negro	0.667**	[0.46,0.96]	0.667**	[0.46,0.96]	0.667**	[0.46,0.96]	0.673**	[0.47,0.97]
Educational attainment (ref: none)								
Pre-school/Basic	3.758	[0.49,28.55]	3.742	[0.49,28.43]	3.7	[0.49,28.09]	3.76	[0.49,28.78]
Secondary	6.213*	[0.82,47.11]	6.162*	[0.81,46.73]	6.147*	[0.81,46.58]	6.156*	[0.81,47.01]
Technical	10.23**	[1.34,78.06]	10.10**	[1.32,77.10]	10.07**	[1.32,76.79]	10.02**	[1.30,77.02]
University/Postgraduate	28.27**	[3.71,215.35]	27.65**	[3.62,210.88]	27.67**	[3.63,210.87]	27.77**	[3.62,213.32]
Passive cultural participation	3.103***	[2.69,3.59]	3.098***	[2.68,3.58]	3.096***	[2.68,3.58]	3.080***	[2.66,3.56]
Socioeconomic status (ref: low)								
Middle	1.116	[0.92,1.36]	1.081	[0.86,1.35]	1.093	[0.88,1.37]	1.066	[0.85,1.33]
High	0.883	[0.60,1.31]	0.815	[0.50,1.32]	0.904	[0.56,1.46]	0.898	[0.56,1.45]
Leisure hours (Monday-Friday)	1.013***	[1.01,1.02]	1.013***	[1.01,1.02]	1.013***	[1.01,1.02]	1.013***	[1.01,1.02]
Leisure hours (Saturday-Sunday)	0.998	[0.99,1.01]	0.998	[0.99,1.01]	0.998	[0.99,1.01]	0.999	[0.99,1.01]
Children <5 years of age in the household	0.637***	[0.54,0.75]	0.638***	[0.54,0.75]	0.632***	[0.54,0.74]	0.632***	[0.54,0.75]
City of residence (ref: Bogota D.C)								
Medellin	1.524**	[1.16,2.00]	1.552**	[1.17,2.05]	1.576**	[1.18,2.10]	1.487**	[1.13,1.96]
Cali	0.465***	[0.35,0.62]	0.473***	[0.35,0.64]	0.523***	[0.38,0.72]	0.479***	[0.36,0.64]
Barranquilla	0.550**	[0.38,0.80]	0.549**	[0.38,0.79]	0.654**	[0.45,0.95]	0.628**	[0.43,0.91]
Read newspaper once a week							1.352***	[1.16,1.58]
<i>Neighbourhood-level variables</i>								
% of individuals with technical/higher education.			1.19	[0.65,2.16]	1.025	[0.56,1.87]	1.016	[0.56,1.86]
% of individuals reporting reading newspapers once a week.					4.452**	[1.46,13.54]	3.044*	[1.00,9.31]
% of individuals reporting no attendance at museums/cultural centres/ theatre/dance/opera because they are too far.					1.861	[0.80,4.34]		
N	8660							
Log likelihood	-3221.6001		-3221.4381		-3217.476		-3211.5481	
Prob > chi2=0.0000								
Wald chi2(19)	1392.06		1390.88		1396.38		1399.32	
Neighbourhood variance	0.232***		0.230***		0.213***		0.2153***	
VPC (Variance Partition Coefficient)	6.58%		6.54%		6.08%		6.15%	

OR: Odds Ratio, CI: 95% confidence intervals in square brackets

*p<0.1, **p<0.05, ***p<0.001

VPC: Proportion of total variance due to differences between neighbourhoods

4 Conclusions

The main aim of this paper is to explore the determinants driving the decision to read books and attend libraries for a developing country, Colombia, using multilevel models to capture the effect which individuals' context has on such decisions. The paper offers similar results to those obtained for Spain by Fernández–Blanco and Prieto–Rodríguez (2009), implying that factors determining book reading and visiting libraries both in developing countries, such as Colombia, as well as in developed countries are the same and are basically linked to greater accumulated cultural capital (educational level and passive cultural participation), socioeconomic status, related to higher levels of educational attainment and higher income, together with fewer time restrictions.

The paper makes a two-fold contribution to the empirical literature addressing cultural participation: firstly by providing an analysis of the decision to read and to visit libraries, thus far absent from studies into developing countries, such as Colombia, and secondly by using multilevel models to reflect the effect which individuals' living environment (neighbourhood) has on the decision to read and visit libraries. This offers an innovation in methodological terms compared to previous studies (Fernandez- Blanco and Prieto Rodríguez 2009; Parra and Corzo 2008; López, 2008).

The results to emerge from the models estimated provide insights into the need to implement cultural policies aimed at boosting reading rates and access to libraries, and underpin the importance of increasing the population's levels of education, particularly at secondary and university level. The findings also reveal the importance of the context [neighbourhood] as an aspect to be considered when devising programmes aimed at encouraging individuals to engage in the two cultural activities studied. In this vein, policies which promote access to cultural facilities such as libraries, together with educational programmes such as promoting reading clubs outside of schools (at bus–stops, on buses, in markets, in recreational areas, etc), that stimulate interest and reading habits, might prove significant.

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