

The Education Level of the Spanish Resident and Stated Attitudes toward Immigration in the European Social Survey

El nivel educativo de la población residente en España y sus actitudes declaradas hacia la inmigración en la Encuesta Social Europea

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Key words

Bivariate Analysis

- Multivariate Analysis
- Classification Tree
- European Social Survey
- Immigration
- Education Level
- Family Origins

Palabras clave

Análisis bivariante

- Análisis multivariante
- Árbol de clasificación
- Encuesta Social Europea
- Inmigración
- Nivel de estudios
- Orígenes familiares

Abstract

The present study uses a quantitative approach to analyse the relationship between education level and stated attitudes toward immigration among the Spanish resident. Data from the European Social Survey (ESS) has been analysed using three quantitative techniques: bivariate analysis, segmentation and multiple linear regression. Results confirm the association between both variables, albeit influenced by family origin and with an intensity below expected in comparison with other intervening factors.

Resumen

En el presente trabajo se analizan, desde la perspectiva cuantitativa, las relaciones entre el nivel de estudios alcanzado y las actitudes declaradas por la población residente en España sobre la inmigración en los últimos años. Para ello, se han utilizado como fuente los datos publicados por la Encuesta Social Europea (ESE) a los que se ha sometido a la aplicación secuencial de tres técnicas de análisis cuantitativo: bivariado, de segmentación y de regresión lineal múltiple. Los resultados confirman la asociación entre ambas variables, si bien mediada por los orígenes familiares de la población y de intensidad inferior a la esperada, en comparación con otros factores intervinientes.

Citation

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INTRODUCTION¹

Just as the quality of water is associated with the quantity of oxygen in it, the intensity and persistence of migratory flows a region receives is a good indicator of its prosperity and one of the visible characteristics of dynamic and open economies. In Spain, immigration, which is essentially employment-related, began to reach considerable levels in the 1990s, ultimately becoming what we can refer to as a “migratory movement” (Escribano, 2014). This movement has had a positive impact on national economic growth, which has been sustained mainly by labour-intensive sectors. It has also had positive effects on the sustainability of the welfare state, as the immigrant population, before the Covid pandemic, contributed 21 % of workers providing direct care to individuals when we exclude health care services (CES, 2019).

Of course, immigration also has its negative aspects. The intensity of migratory flows creates major challenges for both the migrants and the destination society. On the one hand, a good part of the population of immigrant origin finds themselves in socio-economically vulnerable situations, further worsened by the pandemic, which increased the difference in the unemployment rate with native workers by 3 % (OECD, 2021). On the other hand, public opposition to immigration has increased in host societies, an opposition that up until a few years ago was dormant in Spain, but, as in other developed

countries, has now emerged in the form of support for extreme right-wing parties that find their main source of voters among those hostile to immigration (Heath *et al.*, 2020) and who believe the stories that relate immigration with insecurity and unemployment.

Understanding the degree to which immigrant populations are able to integrate in societies and the factors related to the success or failure of integration are crucial for establishing adequate policies and avoiding conflict. The academic literature provides three main perspectives for approaching this issue: One which understands integration as a long-term process that occupies several generations; one which places the focus on perceived barriers, both individual and environmental, that migrants face; and one which focuses on the objective conditions of the host country, such as anti-immigration laws and requisites to obtain citizenship (Maxwell, 2010). Some analysts (Portes and Rivas, 2011; Aparicio and Portes, 2014) classify theories of integration as culturalist or structuralist. Culturalist theories give greater emphasis to the level of assimilation on the part of immigrants, to the adoption of the most widespread linguistic and cultural skills in the host country; while structuralists look at the objective position that immigrants reach, measured by education levels, the jobs they access and other indicators, such as poverty rates, undesired pregnancies and incarceration rates.

Underlying all these perspectives is the influence of education level, of both the immigrant population and the host society, on the level of integration. Regarding immigrants, the impact depends on the primary, but above all, secondary effects of their social origin (Valdés, 2020). Regarding the receiving population, the majority of the academic literature (for example, Hainmueller and Hiscox, 2007; Semyonov, Rajman and Gorodzeisky, 2008; Wall *et al.*, 2010; Margaryan, Paul and Siedler, 2021; Alesina, Miano and Stantcheva, 2023) consistently points to the existence of a solid and positive connection between education level

¹ The analysis presented here has been made possible thanks to the guidance of Dr. Violante Martínez Quintana and to the evaluations by the evaluating Tribunal on a preliminary version submitted for the final project of the 30th Postgraduate course for training experts in applied social research and data analysis [Curso de Posgrado de Formación de Especialistas en Investigación Social Aplicada y Análisis de Datos] of the Centre for Sociological Research (2021-2022); as well as to the anonymous reviews received and the corrections of the REIS editorial committee. Special thanks to Dr. Carmen Maíz-Arévalo for our discussions at home about methodology and for encouraging me to continue researching. Responsibility for any errors in the text lies solely with me.

and attitudes toward immigration, either because, according to the cognitive framework, respondents with higher tolerance have more positive evaluations of immigration; or because, as a labour market framework postulates, those with higher education do not compete for the same jobs as immigrants, who are mostly employed in low-skilled and low-wage jobs. A link has also been found between lower education levels and voting for parties that advocate the closing of borders, as was found in the case of Brexit (Heppell, Crines and Jeffery, 2017).

However, other recent studies have found reasons to doubt the importance that education plays in attitudes toward immigrants, either because they find a weak association between them (McLaren and Paterson, 2020) or because they question education level as the cause of attitudes toward immigration, arguing that the results of research reveal a selection bias in favour of education as an explanatory variable. This bias is detected not only in explanations of attitudes toward immigrants (Finseraas, Skorge and Strøm, 2018) but also in political participation (Persson, 2015) and would explain why anti-immigration sentiments have remained high in Western countries despite their average level of education² rising in recent decades (Hainmueller and Hopkins, 2014).

Data from the European Social Survey (ESS) permit us to approach this question using a rigorous quantitative approach. The informative quality of the ESS is unquestionable in comparison to other sources (Cea, 2005); for example, in the field work no substitution of any type is accepted, neither in the cases of “rejection” nor in those of “no contact”. In the sample design no selection of individuals is permitted, that is, the sample must be probabilistic in all stages, not

accepting the use of quotas by sex and age. In addition, an effective size of at least 1500 surveys and a minimum rate of response of 70 % is necessary, a requirement that is difficult to meet and for which specific strategies have been proposed in Spain to reach it (Riba, Torcal and Morales, 2010).

Using data from the ESS, this study quantitatively analyses the possible association between education level and attitudes toward immigration in Spain, operationalizing the concepts through variables based on the latest indicators in the ESS. The variables obtained were submitted to successive univariate, bivariate and multivariate analyses that test this association and measure the size of their effect.

RESEARCH QUESTION

Considering this background, this study proposes to test the existence of a relationship between education level and attitudes toward immigration, and in the case of a positive relationship, measure the strength of the connection in comparison with other variables that may also influence these attitudes.

To answer this research question, we propose the following hypotheses:

- H1: An association exists between education level and attitudes toward immigration, with statistically significant differences found between persons of foreign family origin and those of native family origin.
- H2: Education level is the explanatory variable of greatest weight on the attitude of the Spanish resident toward immigration, greater than other possible exogenous variables.

METHODOLOGY

To verify or refute the two hypotheses, we apply, sequentially, three quantitative methods using the data published in the ESS. First, we carry out a bivariate analysis, cross

² The evolution of education level in Spain can be consulted in the reports “Sistema Estatal de indicadores de la educación” which the Ministry of Education publishes periodically.

tabulating education level with expressed attitudes toward immigration to get an initial picture of the existence or not of an association between attitudes towards immigration and level of education and, if an association is found, to identify in which categories differences with respect to the expected values are to be found. On the assumption that this first test is positive, new variables are incorporated into the analysis, first through segmentation and then through multiple linear regression, to position and compare education level as an explanatory variable with other intervening variables.

We use the 10th edition of the ESS for Spain as the primary data source, the field work for which was carried out between 21 January and 31 May 2022. During this period of time no notable events related to immigration took place in Spain, such as, for example, migrants climbing the border fences at Melilla and Ceuta or mass arrivals by boat, which certain media and political parties amplify, referring to “invasions” and creating alarm that might affect responses in a survey. Therefore, we can state that the results obtained for Spain, and by extension, this study, were not influenced by any immediate events that might have affected a relevant proportion of individuals in the sample. At least in terms of attitudes toward immigration, we refer to the latest wave of the ESS.

SPSS software³ was used for the statistical analysis, as was the weighting variable recommended and provided by the European Social Survey for all the analyses.

DEFINITION OF THE DEPENDENT VARIABLE, “ATTITUDES TOWARD IMMIGRATION”

Every edition of the ESS published up until now has included questions related to im-

migration. In addition, the first (2002) and seventh (2016) waves incorporated a specific rotating module on the issue. With the data from the latter, Roots *et al.* (2016) constructed several indices about immigration that passed internal reliability and external validity tests. This study uses one of these indices, that referred to as “BENEFITS” or “immigration benefits” (Roots, Masso and Ainsaar, 2016: 9), to operationalize the dependent variable “attitudes toward immigration”.

This index, in addition to being one of two proposed in the study cited that could be constructed with data from the ESS (starting with the 7th edition), has the advantage of being composed of three close-ended questions with responses ranging from 0 to 10, which, although being discrete values (non-continuous), we can assimilate to a quasi-scale and consider the index as a ratio variable. This opens up greater possibilities for quantitative analysis. In concrete, the three questions included in the index are:

- Would you say it is generally bad or good for Spain’s economy that people come to live here from other countries?
- Would you say that Spain’s cultural life is generally undermined or enriched by people coming to live here from other countries?
- Is Spain made a worse or a better place to live by people coming to live here from other countries?

To confirm the internal validity of the index constructed with these three questions and based on the responses in Spain for the 10th wave of the ESS, we carried out a reliability analysis to calculate Cronbach’s alpha⁴. This statistic measures the average value for all the possible partitions from a split-half re-

³ SPSS version 27.0.1.0.

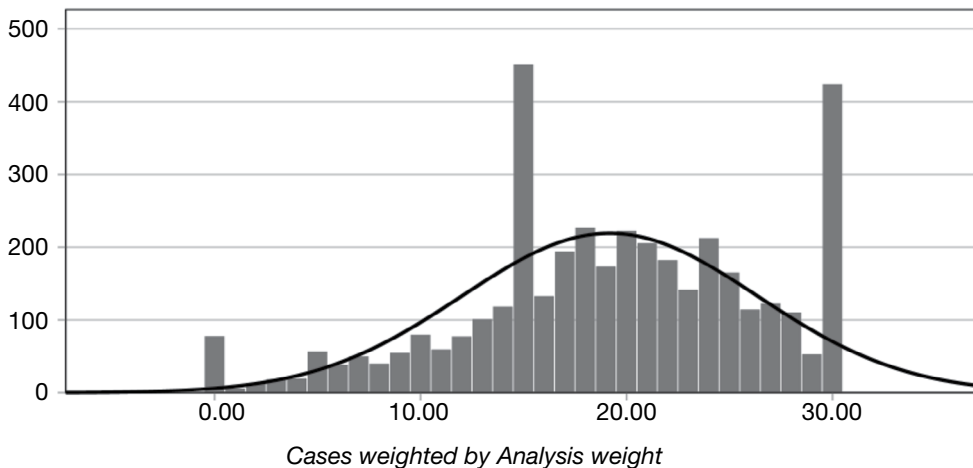
⁴ The coefficient is used as a measure of internal coherence for the index and the scale that is constructed. The formula for calculating it is: $nr / (1+r(n-1))$, in which n refers to the number of elements (or items or questions) included in the scale, and r is their average correlation.

liability test. The value varies from 0 to 1, the higher the value the greater is the coherency of the indicator. In this case, Cronbach's alpha has a value of 0.87, which reveals a high level of internal coherence.

Looking at a histogram from the values of the index, we see two atypical values in

the frequency distribution with respect to a normal distribution. We see a very high value close to the centre. What is common in this type of scale (0-10) is that responses accumulate around a central value, which serves as a location for what might be referred to as unconsidered responses.

GRAPH 1. Histogram for the index constructed from attitudes toward immigration



Source: By author based on data from the 10th wave of the ESS for Spain.

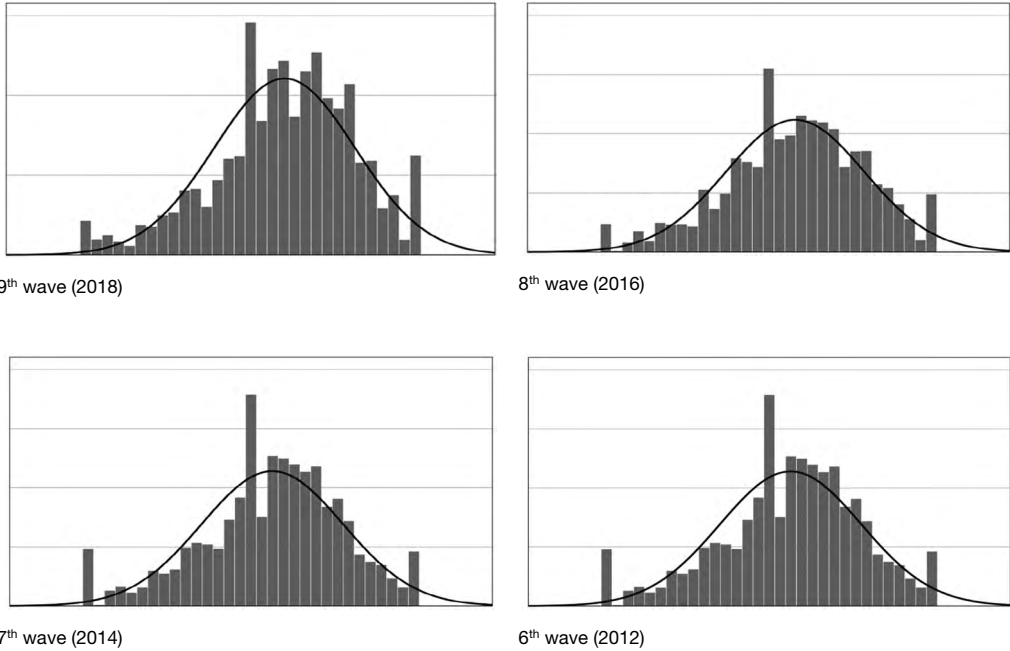
Of more interest is that we also see that a high number of maximum scores exist. The bar furthest on the right of the graph represents the population that responded with a 10 to all three questions. The proportion of such answers is much higher than we find for those that gave an answer of 0 for the three questions. Comparing these results with data from previous editions of the ESS for Spain, we find (Graph 2) that, since the 8th wave (2016), the distance between these maximum and minimum values has been increasing, which indicates that a greater proportion of the population is very positive about immigration, either the effect of a greater social desirability that the question may generate, or a combination of both factors.

Given that the survey for the 10th wave, in contrast to previous waves, was self-administered, which is the method least af-

ected by acquiescence bias or social desirability bias, as there is no mediation by an interviewer (Cea, 2009: 33), the inclination would be to assume that the number of persons with very positive attitudes toward immigration has grown in comparison to those with very negative attitudes.

Both these maximum and minimum scores are grouped in the bivariate analysis shown below, and for which we have defined three categories: the population clearly in favour of immigration (any values above 20), those that are most against immigration (values below 15), and a middle category of those judged "indifferent" and based on the central values of the index. In Table 1 we show the frequency of values for these groups, both original and estimated, once the weighting coefficient recommended by the ESS is applied.

GRAPH 2. Comparative histogram for the benefits of immigration index



Source: By author based on data from the ESS for Spain.

TABLE 1. Frequency of the categories for the variable “Attitudes toward immigration”

	Unweighted count	Coefficient of variation	Estimate
Against	424	0.047	811
Indifferent	777	0.035	1,401
In favour	1,013	0.030	1,731
Total	2,214	0.019	3,944

Source: By author based on data from the 10th wave of the ESS for Spain.

EDUCATION LEVEL AND ATTITUDES TOWARD IMMIGRATION: A BIVARIATE ANALYSIS

To evaluate the impact of education level on attitudes toward immigration, we use the variable on education level from the ESS questionnaire⁵, which includes 27 possible re-

sponses, as well as the category “others”. The first step, as in the case of the BENEFITS index, was to group the responses into the three following categories:

- No formal or basic education (items 1 to 9 of the variable).
- Intermediate levels of education (items 10 to 21).
- Higher levels of education (items 22 to 27).

⁵ Variable “edlvges” in the ESS.

TABLE 2. Attitudes toward immigration by education level

Attitudes toward immigration	Education level			Total
	No formal or basic education	Intermediate levels	Higher levels	
Against	26.7 %	19.3 %	13.5 %	20.6 %
<i>Corrected residual</i>	8.2	-1.2	-7.6	
Indifferent	36.6 %	34.6 %	33.6 %	35.3 %
<i>Corrected residual</i>	1.4	0.1	-1.6	
In favour	36.7 %	45.3 %	53.0 %	44.1 %
<i>Corrected residual</i>	-8.0	0.8	7.7	
Total (N = 3,879)	100.0 %	100.0 %	100.0 %	100.0 %
Statistics for association	Value	df	Significance	
Pearson's Chi-square:	107.496 ^a	4	< 0.001	
Cramer's V	0.118		< 0.001	
Gamma	0.228		0.000	

Source: By author based on data from the 10th wave of the ESS for Spain.

The following step was to carry out the first bivariate analysis between attitudes toward immigration and education level using a contingency table⁶, cross tabulating the categories for these two qualitative polytomous ordinal variables to explore the association, if any, between them.

Table 2 shows the existence of a positive and statistically significant relationship, although the overall strength of the association is moderate, according to the Gamma statistic, which also yields a significant value. It is at the extremes for education (highest and lowest education levels) where we find the largest differences for the expected frequencies, with values well outside ± 2.58 standard deviations (marked in bold in the table).

Therefore, taking education level as the only explanatory value for the index on the benefits of immigration, we can state that they

are related. However, we cannot limit ourselves to this bivariate analysis if we want to confirm the association between these variables; as we have seen in the literature, this association can be mediated by other factors. One factor so identified is whether the interviewee is an immigrant or native. To include this variable, we have recoded two variables based on the results of the multiple and semi-open-ended responses to a question in the ESS on family origin, in which the interviewee can choose up to two options among 20, as well as a response of "others". The ESS responses are based on the European Standard Classification of Cultural and Ethnic Groups⁷.

The first of the recoded variables for this study was constructed grouping the responses into six categories according to whether the interviewee stated to be of one or two Spanish origins (only Spanish, or Spanish and of one of Spain's historical nationalities), of a historical nationality, foreign nationality and other possible combinations⁸.

⁶ A contingency table is a bi-dimensional table in which the variables are not quantitative, as in a frequency table, but qualitative, as in this case. The cells of the table allow us to explore the existence of associations between the different categories of the variables. The standardized corrected residuals indicate if these associations are significant: if they are above 1.96 at a 95 % confidence level, or above 2.58 at a 99 % confidence level.

⁷ All the details can be found in appendix 8 of the 10th Editions of the European Social Survey.

⁸ 1) "Only Spanish" 2) "Only historical territories" 3) "Only foreign" 4) "Spanish and historical territories" 5) "Foreign and Spanish" 6) "Foreign and historical territories".

The second variable converted these six variables into two, one for persons that stated they had foreign origins and one for those that did not. This dichotomous variable is in-

cluded as a layer in the following analysis to test if the relationship between education and attitudes toward immigration is maintained.

TABLE 3. Attitudes toward immigration by education level controlled by family origins

Some foreign origin	Attitudes	Education level		
		No formal or basic education	Intermediate levels	Higher levels
No	Against	26.6 %	20.4 %	14.4 %
	Corrected residual	6.8	-0.6	-6.6
	Indifferent	38.7 %	37.7 %	33.8 %
	Corrected residual	1.9	0.6	-2.6
	In favour	61.3 %	66.4 %	63.8 %
	Corrected residual	-7.5	-0.1	8.0
Yes	Against	19.6 %	7.2 %	6.7 %
	Corrected residual	3.8	-1.8	-2.1
	Indifferent	21.7 %	22.4 %	31.9 %
	Corrected residual	-1.2	-0.9	2.1
	In favour	58.7 %	70.4 %	61.5 %
	Corrected residual	-1.4	2.0	-0.5

Source: By author based on data from the 10th wave of the ESS for Spain.

TABLE 4. Phi and Cramer's V for the cross-tabulations controlled by country of birth

Some foreign origin			Value	Approximate significance
No	Nominal by Nominal	Phi	0.167	< 0.001
		Cramer's V	0.118	< 0.001
	N of valid cases		3,299	
Yes	Nominal by Nominal	Phi	0.211	0.001
		Cramer's V	0.149	0.001
	N of valid cases		403	
Total	Nominal by Nominal	Phi	0.162	< 0.001
		Cramer's V	0.115	< 0.001
	N of valid cases		3,702	

Source: By author based on data from the 10th wave of the ESS for Spain.

Tables 3 and 4 show the effects of adding family origin as a control variable and reveal that the association between education and attitude toward immigration continues reaching significant p-values and

that, overall, it has a similar strength to that reached in the analysis without considering origin, as can be seen with the value of Cramer's V (0.115 versus 0.118), although this intensity increases to 0.149 in the con-

crete case of persons with some foreign origin.

In addition, the analysis of the residuals indicates similar differences in persons without foreign origins to those we see before including the control variable, and that in the case of persons that indicate foreign origins this only happens to those with lower education levels, who, significantly, show themselves to be against immigration in greater numbers; in other words, persons of foreign origin and low education level are more averse to immigration in greater than expected numbers.

In short, we see in these two initial analyses an overall association between education level and attitudes toward immigration, with significant differences between the categories that refer to high and low education levels in the case of persons without migrant origin, and within the categories for lower education levels for the population with foreign origin.

Therefore, based on the bivariate analysis, the first hypothesis is confirmed; it can be stated that there is an association between attitudes towards immigration and education level. The existence of statistically significant differences between persons of foreign family origin and those that are of native family origin is also confirmed. In the following sections we look further at this association, introducing new potentially explanatory variables.

THE POSITION OF EDUCATION LEVEL AS A PREDICTOR OF ATTITUDES TOWARD IMMIGRATION: THE DECISION TREE

A decision tree is used here as an exploratory technique to evaluate education level as a discriminant of attitudes toward immigration in comparison with other socio-demographic factors. This technique⁹ uses an

⁹ A decision tree is a technique for discriminating among variables that has been widely used in research

algorithm based on the Chi-square statistic (χ^2) that looks for the best associations of the independent variables with the dependent variable, selecting those categories that best predict the values of this study's dependent variable: attitudes toward immigration.

The use of a classification analysis based on a decision tree has a dual purpose. First, it illustrates the position of education level as an important factor in determining attitudes toward immigration in comparison with other socio-demographic factors, in this case, sex, age, household income, habitat and employment status, as well as family origin, included in the prior analysis. We should note that a part of the academic literature discussed here attributes the importance of education level to the selection bias of the variable itself. We avoid this bias with this segmentation technique. Secondly, through the decision tree we obtain information on both significant nodes and categories that could be merged into *dummies* for the multivariate regression analysis that follows.

Specifically, the segmentation applied in this decision tree groups the categories of the selected exogenous variables using the CHAID or *Chi-squared automatic interaction detection* criterion, forming all possible pairs and calculating the Chi-squared of each pair and adjusting the significance using the Bonferroni criterion. The merging of the pair is executed as long as its significance has a given p-value, in this case higher than 5 %, considering that, in the case of ordinal and

with quantitative dependent variables. The introduction of Chi-square as the cut-off statistic (instead of the intergroup quadratic sum) has made it possible to apply this technique in analyses combining scalar and nominal dependent variables, as in this case. The tree structure makes it easier for the researcher to classify the explanatory variables introduced, as well as to regroup their categories based on the associations detected. For a better understanding of the logic of segmentation analysis and the Chaid algorithm, we recommend consulting Escobar (1998).

scalar variables (education level, age and income), merging can only take place between contiguous categories and values. The next step is the selection of the variable that provides the best split, for which the criterion of least significance is used, provided that the p-value is less than 5 % for this analysis. The stopping criterion per node size is set at 100 cases for parent nodes and 20 for child nodes.

The classification tree thus configured (see Graph 1) places education level at the first level of segmentation, ahead of the other socio-demographic components introduced. It is interesting to note how the discriminant factor changes at the second and third levels, based on the level of education attained. In the terminal nodes, persons who are most in favour of immigration within their segmentation group are those who declare foreign family origins, who have a job or are actively looking for one and who have attained higher education levels (72.2 % in favour). In contrast, it is the population aged 48 or under, that share Spanish origin and origin from one of the historical nationalities¹⁰ and who have no formal education that reveal negative attitudes towards immigration (43.4 %).

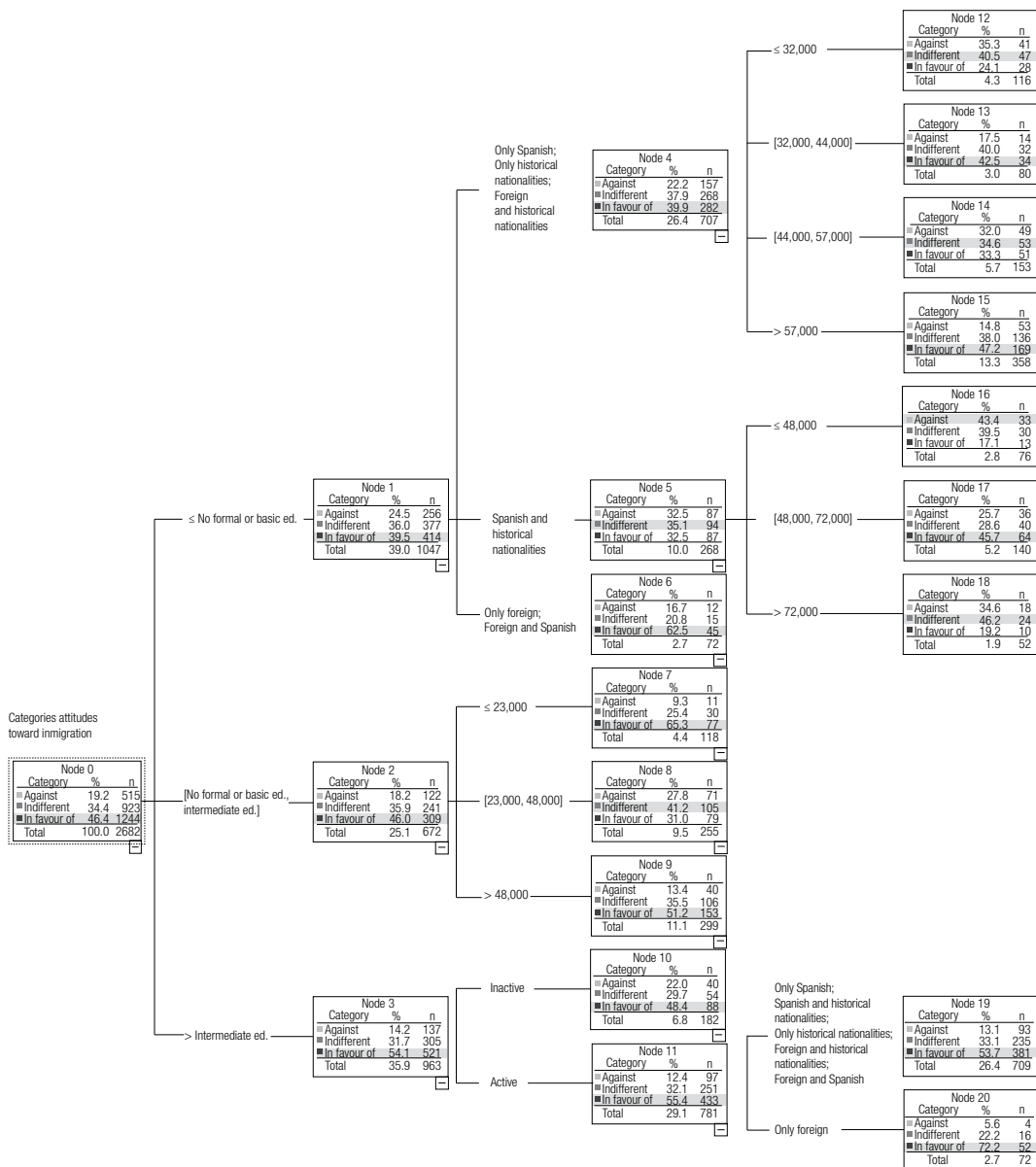
It is also interesting to note how the classic socio-demographic variables, sex and household income, do not reach sufficient p-values for the segmentation analysis to discriminate them. Subsequently, in the multiple regression analysis, we will see the scant weight of family income and how gen-

der does not obtain statistical significance in the model. As for the rest of the variables, the following are some considerations worth highlighting:

- The classification tree segments the categories of the family origins variable, here introduced with the categories extended to six, into three distinct groupings at levels 2 and 3. Two elements are common to these groupings: as might be expected, the category “only foreigners” is found among those with the most positive attitudes towards immigration. More revealing is the fact that “only historical nationalities” and/or “historical nationality + other category” are, in all cases, among the groups with the most negative assessments of immigration.
- Regarding age, this is a variable of segmentation for persons with low education levels and that have at least one historical nationality as part of their family origin. The attitude of these persons toward immigration fluctuates with age without a clear pattern. It is also a cut-off variable for those with intermediate education, with people between 24 and 48 years old having a more negative attitude.
- Habitat is significant for younger persons with intermediate education levels, as we find a clear difference between those that live in towns or small cities, who have more negative attitudes toward immigration than residents in other places.
- Lastly, employment status is a second level discriminant variable for those with the highest education levels, where the percentage of persons that are employed or actively seeking work (81.1 %) is much higher than the percentage of economically inactive (18.9 %). In both cases, attitudes toward immigration are similar, with a small positive difference found for the active population compared to the inactive population, significant only for those that state a foreign origin.

¹⁰ The European Standard Classification of Cultural and Ethnic Groups (ESCEG), with which the ESS works, echoes this distinction and uses different codes for so-called “historic nationalities”, or simply “nationalities”, taking account of the eight regions that are so defined in Spain in their statutes of autonomy: Andalusia, Aragon, the Balearic Islands, the Canary Islands, Catalonia, the Valencian Community, Galicia and the Basque Country. For the rest of Spain’s regions, the ESCEG uses only two codes: “Spanish not classified in other part” and “Spanish city or region not included in elsewhere”. In this study, both codes of origin have been grouped into one: “Spanish”.

GRAPH 3. Decision tree: Attitudes toward immigration and socio-demographic variables



Source: By author based on data from the 10th wave of the ESS for Spain.

In short, the classification tree positions education level as the first segmentation variable, showing more positive attitudes towards immigration in each higher educational category, although the modal category in all the terminal nodes is indifference or in

favour of immigration, with the exception of the node for the population aged 48 and under, with a low educational level and a mixture of Spanish origins and from historical nationalities, the only case in which people against immigration are in the majority.

COMPARISON OF VARIABLE COEFFICIENTS THROUGH MULTIPLE LINEAR REGRESSION ANALYSIS

The decision tree has facilitated the classification of subjects, however, to obtain parametric results, in terms of the contribution of the exogenous variables to the endogenous variable, it is necessary to use other techniques, such as regression models. In the words of Wooldrige (2015: 61), "The power of multiple regression analysis is that it allows us to do in nonexperimental environments what natural scientists are able to do in a controlled laboratory setting: keep other factors fixed".

Among the possible regression models, we use multiple linear regression because it is a

versatile model for large samples and for evaluating a continuous destination (in this case, the benefits of immigration index constructed with the three questions from the ESS survey) through the selected predictors, this time synthesized through factorial analysis. The index thus constructed exceeds the thresholds recommended in the KMO and Barlett tests and explains 79.16 % of the variance.

It has been verified that the data meet other requisites for the use of multiple linear regression models: normality and homoscedasticity in the distribution of the residuals, verified through P-P and dispersion graphs (see appendix 1); as well as the absence of multicollinearity, checked by calculating tolerance and variance inflation factors (see Table 5).

TABLE 5. *Coefficients and collinearity statistics of the multiple linear regression model*

Model	Standardised Beta coefficients		Collinearity statistics	
	Beta	Tolerance	VIF	
(Constant)				
Age	0.073**	0.857	1.167	
Man	0.004	0.962	1.039	
No formal/basic education	-0.073**	0.581	1.722	
Higher ed levels	0.045*	0.604	1.657	
EMPL STATUS=Inactive	0.016	0.841	1.189	
Household income	0.045*	0.759	1.318	
Ideological self-placement	-0.349**	0.973	1.028	
PLACE = Outside a large city	0.001	0.782	1.278	
PLACE = A small or medium-sized city	-0.002	0.575	1.738	
PLACE = A town	-0.061**	0.562	1.779	
PLACE = A farm or house in rural area	-0.025	0.893	1.119	
ORIGINS = Only Spanish	-0.264**	0.276	3.622	
ORIGINS = Only historical regions	-0.258**	0.310	3.228	
ORIGINS = Spanish and historical regions	-0.280**	0.319	3.133	
ORIGINS = Foreign and Spanish	-0.015	0.881	1.134	
ORIGINS = Foreign and historical regions	-0.024	0.910	1.099	
R ²	0.176			
F Regression	35.871**			

*p-value < 0.05; **p-value < 0.01.

Source: By author based on data from the 10th wave of the ESS for Spain.

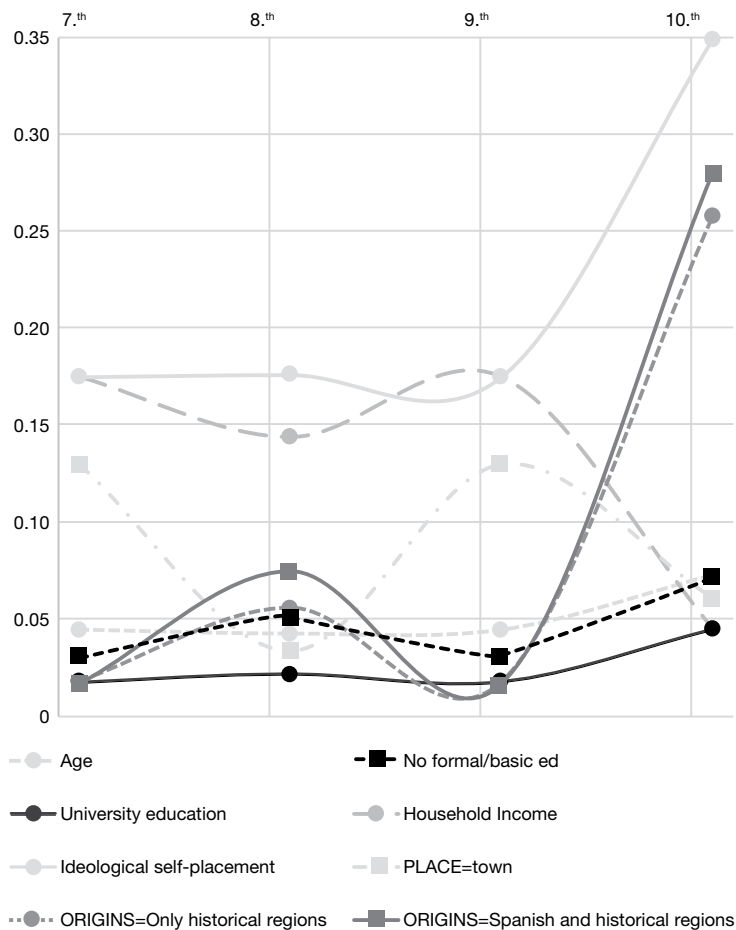
Three scalar (or quasi-scalar) variables have been introduced in the model: age, household income and self-placement on a political scale, as well as five categorical variables from the decision tree, dichotomized with the following reference categories:

- Sex: woman.
- Education level: intermediate education.
- Employment status: active.
- Place of residence: city.
- Origin: only foreign.

Table 5 summarises the results of the model. Significance, as measured by the F-statistic, is positive, and according to the coefficient of determination R, the model explains 17.6 % of the variability of the index of attitudes towards immigration.

Of the variables introduced in the model, neither sex nor employment status reach minimum p-values that permit drawing conclusions about them. Nor do some of the categories for the place and origin variables reach statistical significance. However, the model provides important information about the rest of the regressors, which can be classified as:

GRAPH 4. Evolution of the model's standardised coefficients (2014-2020)



Source: By author based on data from the 10th wave of the ESS for Spain.

- Those that positively affect the index: age (0.073) and higher levels of education and household income (0.045).
- Those that negatively affect the index, in this order: ideological self-placement (−0.349; the further to the right of the scale, the more negative the attitudes), non-foreign family origins (−0.28 to −0.258) and persons without formal or basic educations (−0.073).

In both cases, the standardized beta coefficients for education level are statistically significant. However, if we compare them with the rest of the coefficients, they reveal that education level is not of great weight. In Graph 4, we can see the evolution of the absolute values for the standardized beta coefficients with significant values in the most recent editions of the European Social Survey¹¹.

As can be seen, the variables for education, highlighted in bold, are below other variables, such as ideological self-placement, age and origins, and only above or with similar values to household income and place of residency. Therefore, and considering these results, we must reject the second hypothesis that states that education level is the explanatory variable of greatest weight in determining the attitude of the population toward immigration.

CONCLUSIONS

This study has examined the relationship between the education level of the Spanish resident and attitudes toward immigration from a quantitative perspective, both transversal, with data from the latest edition of the ESS (2020), and longitudinal, starting with the 6th wave (2012). In an initial ap-

proach, using histograms, we were able to see how the number of persons that score on a maximum level (positively) on questions regarding the benefits of immigration has grown in relation to those that score low (negatively) on these questions.

Once the variables were operationalized, we applied several techniques of analysis sequentially. The bivariate analysis reveals a moderate association between education level and attitudes toward immigration, with significant differences between persons that share some foreign origin based on the European Standard Classification of Cultural and Ethnic Groups used by the ESS. In addition, we find statistically significant differences between the categories of high and low education levels in the case of persons without foreign origin and in the categories for low education for the population with foreign origin.

Segmentation places education level as the first cut-off variable among other socio-demographic factors, leaving out classic variables like sex and family income. However, this position for education level is not supported by the regression analysis, which isolates the effect of each of the variables introduced in the index on attitudes. Habitat, age and, above all, family origins and ideological self-placement have greater impact on attitudes than education level. Nevertheless, and given that little or nothing can be done through public policies regarding these variables, efforts should continue to focus on improving the education level of the population if we want to improve social integration and contain conflict between migrant and native populations in Spain.

LIMITATIONS AND FUTURE DIRECTIONS FOR RESEARCH

Although the standards of the European Social Survey are strict and guarantee the best representativeness of the sample, it is still

¹¹ It is only starting with the 7th edition of the ESS that published data exists for the variables *anctry1* and *anctry2* used to construct the “origins” variable introduced in the bivariate analysis in this study.

an approximation of social reality based on the statements of the people interviewed, hence the title of this study incorporates the adjective “stated” in referring to the attitudes of the Spanish resident towards immigration. However, the main limitations stem from the critical decisions made in the selection of the intervening variables, their operationalisation and the choice of the quantitative techniques employed. In this sense, segmentation analysis and contingency tables are good tools to classify the introduced variables and explore possible relationships, but they are not sufficient to know their effect on stated attitudes. For its part, the regression model used does permit us to know the weight of each exogenous variable on the dependent variable, although it has not proved to be as effective in explaining its variability, according to the goodness of fit as measured by the coefficient of determination.

In any case, the application of sequential techniques has permitted us to achieve robust results in identifying the moderate role of education level in comparison with other socio-demographic factors in shaping attitudes toward immigration. Based on these results, we suggest two directions for complementary research: On the one hand, triangulating the results obtained here, introducing a qualitative methodology, such as discussion groups based upon the socio-demographic factors that have been identified in this study as significant and, on the other hand, comparing the situation in Spain with that found in other European countries using the ESS.

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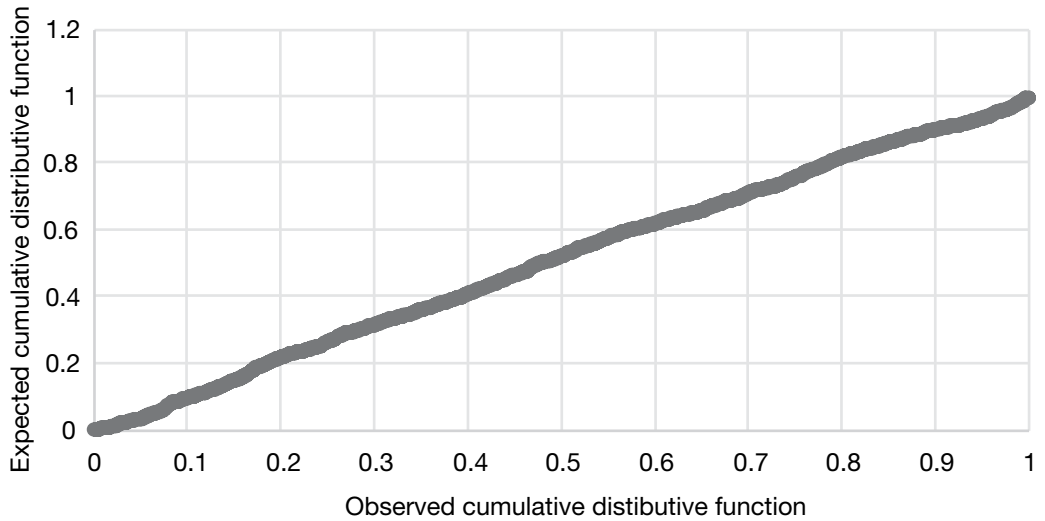
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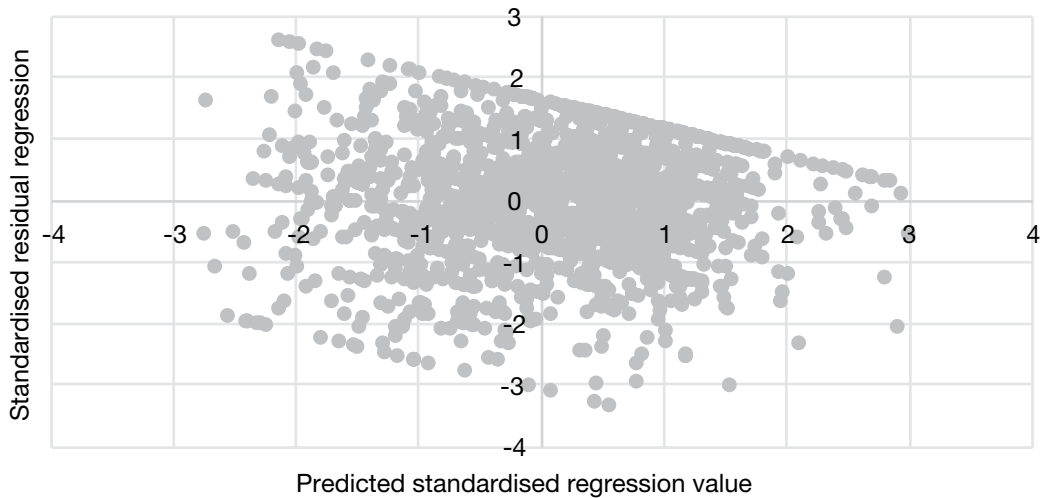
APPENDIX

GRAPH A1. *P-P plot comparing the observed cumulative distribution function (CDF) of the standardized residual to the expected CDF of the normal distribution*



Source: Cases weighted by Analysis weight.

GRAPH A2. *Scatter plot*



Source: Cases weighted by Analysis weight.

