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A study of social categorisations shared by Spanish students based on analysis of lexical associations: Migratory movements, animal rights movements, and gender-based violence

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Abstract: Identifying the perceptions and opinions held by a population in connection with a social movement can help to understand how well the movement's intended messages are spreading. A focus on the student population is essential for this understanding, as these individuals represent the future. In this work, we therefore analyse the prototypical conceptualisations regarding the movements of migration, animal rights, and gender-based violence shared by a sample of 600 Spanish students enrolled in compulsory secondary, pre-university, and university education. We use word association tests to extract lexical networks and then design the underlying metastructure to access the cognitive perception shared by the sample. Overall, we observe that the intended messages of equality and respect are catching on, although we do identify certain distorted perceptions, pertaining to some of the independent variables employed. Based on our results, we recommend that education centres must become transmitters of objective information on these movements, so that students catch on to a respectful awareness distant from extreme ideologies.

Keywords: *community prototypes, migratory movements, animal rights movements, gender-based violence, lexical compatibility.*

Estudio de las categorizaciones sociales compartidas por estudiantes españoles a partir del análisis de sus asociaciones léxicas: movimientos migratorios, derechos de los animales y violencia de género

Resumen: La identificación de las percepciones y opiniones de una población sobre un movimiento social determinado puede ayudar a comprender el grado de calado de los mensajes que promueve dicho movimiento. El enfoque en la población estudiantil es esencial para esta comprensión, ya que estos individuos representan el futuro de la sociedad. En este trabajo analizamos las conceptualizaciones prototípicas sobre los movimientos migratorios, los derechos de los animales y la violencia de género compartidas por una muestra de 600 estudiantes españoles que cursan Educación Secundaria Obligatoria (ESO), Bachillerato y estudios universitarios. Utilizamos pruebas de asociación de palabras para obtener redes léxicas y luego diseñamos la metaestructura subyacente para acceder a la percepción cognitiva compartida por la muestra. En general, observamos que los mensajes de igualdad y respeto están calando suficientemente, aunque identificamos ciertas percepciones distorsionadas relacionadas con algunas de las variables sociales empleadas. En función de nuestros resultados, recomendamos que los centros educativos se conviertan en transmisores de información objetiva sobre estos movimientos, para que el estudiantado adopte una conciencia respetuosa alejada de las ideologías extremas.

Palabras clave: *prototipos comunitarios, movimientos migratorios, derechos de los animales, violencia de género, compatibilidad léxica.*

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1. Introduction

The sociocultural characteristics of speakers largely determine their lexical choices (Boberg, 2005; Chan, 2017; Geeraerts et al., 1994; Grondelaers et al., 2010; Johnson, 1993; Kiesinger, 2015; Shi & Lei, 2021), and by identifying, analysing, and interpreting these characteristics, research can reveal interesting information concerning cognitive aspects of individuals. Proven sociolinguistic methodologies can be used to study many cognitive aspects in detail and to subsequently identify socio-community patterns. Such patterns can provide an understanding of the approaches, attitudes, and behaviours of a population towards current issues of particular social interest (Godenzzi, 2009). Researchers can then use the identified patterns of social perception to confirm or refute the presence of stereotypes regarding vulnerable social groups, which allows them to propose areas for improvement or reinforcement to education and administration. With such knowledge, researchers can also evaluate the degree to which populations are (dis)informed, a factor that may affect the collective attitude towards social developments.

However, going beyond the study of the individual to the analysis of community perceptions is by no means a simple task, as this step poses problems for both theory and methodology. Fortunately, the field that combines cognitive linguistics, psycholinguistics, and sociolinguistics does offer an approach for accessing shared information, reflected in the methodology used to extract lexical and semantic networks from the individual (Angulo-Chavira and Arias-Trejo, 2021; Collins & Loftus, 1975; Collins & Quillian, 1969; Ferreira & Echeverría, 2010; Gilquin, 2008; Hansen et al., 2020; Mani & Borovsky, 2018; Peters & Borovsky, 2019; Villar Díaz, 2018). This approach builds on a detailed understanding of cognitive processes and produces collective prototypes for societies (Apostel et al., 2023; Blank, 2001; Geeraerts, 1989; Lakoff, 1987b; Kleiber, 1995; Paul et al., 2015; Rosch, 1973, 1975, 1977, 1978; Smith, 2014), meaning it allows researchers to construct collective models of perception based on individuals. Researchers can then use these models as scales on which to measure a population's tolerance, inclusivity, and acceptance of social developments.

Against this background, we intend to access and analyse the perceptions shared by a group of 600 Spanish students enrolled in compulsory secondary, pre-university, and university education regarding three current, sensitive topics: migratory movements, animal rights movements, and gender-based violence. For this purpose, we will study the lexical networks at the disposal of the sample groups from the two speech communities considered (Malaga and Cadiz, Spain), analyse their thematic vocabulary, and identify their perceptions and underlying beliefs.

Our general aim builds on the following premises:

(1) A community's perception of a contentious social reality becomes apparent in lexical-semantic differences. The various socioeconomic conditions of urban centres (economy, population movement, urban planning, immigration, etc.) can

condition inhabitants' ideology and perception, and this becomes apparent in the lexical structure of semantic content (Grieve et al., 2019; Hilte et al., 2020; Riemer, 2010; Ruette et al., 2014).

(2) Lexical prototypes provide access to cognitive prototypes. The individuals' thematic vocabulary is structured around prototypical nuclei that specify the most frequently used and most frequently shared lexical units. The compatibility of the vocabulary with the lexical prototype is described by applying fuzzy set theory (Ávila-Muñoz & Sánchez-Sáez, 2010, 2011; Villena Ponsoda et al., 2012), and the resulting fuzzy set represents the cognitive prototypes that underpin a society's opinions. The frequently shared lexical units can be quantified and interpreted, a process that reveals frequently shared concepts.

(3) As a result, we can identify stereotyped and discriminatory cognitive prototypes as well as lexical and cognitive gaps within fields of experience relevant to contemporary social life. Based on this information, we can then offer recommendations for the improvement of educational curricula (regarding inclusion, tolerance, diversity, equality, transversality, etc.).

This framework results in several objectives for the present work:

(1) To investigate the perceptions of reality held by the sample of students enrolled in programmes reaching from compulsory secondary education to higher education.

(2) To observe how sociocultural factors affect these perceptions.

(3) To study the vocabulary associated with the chosen topics by employing methods of sociolinguistic analysis such as tests of lexical availability.

(4) To study the cognitive prototypes identified in the collective mental representations produced by the study sample for the chosen stimuli.

(5) To reflect on the perceptions held by the different groups considered regarding the chosen topics.

(6) To identify areas of perception that have been recently acquired or may even be discriminatory towards certain vulnerable groups.

(7) To suggest areas for improvement to education and administration with the aim of fostering tolerant and inclusive societies.

We believe that this work may be of particular interest to communities of practice (Li et al., 2009; Wenger, 1996; Wenger et al., 2002) consisting of researchers, educators, and students seeking to understand the perceptions and attitudes of young students regarding issues faced by vulnerable groups – an area where education plays a significant role. Our approach provides a method for identifying patterns and tendencies based on the lexical associations employed by students in connection with such issues, the aim being to understand how these perceptions may affect the attitudes and behaviours of society. In

addition, we believe that our results may also benefit groups and associations involved in activism, because these could use our results in the development of future strategies for action.

The research questions for this study stem from the above foundations and are itemised as follows:

(1) What are the perceptions held by the students under study regarding the chosen topics?

(2) Does the type of education centre (public or private) determine the shared perceptions regarding immigration, animal rights, and gender-based violence?

(3) Does gender identity determine the shared perceptions of such social issues?

(4) Does age affect the shared perceptions?

(5) Does an increase in formal education affect the shared perceptions?

We hypothesise that especially the type of education centre will determine the students' responses and, hence, their shared perceptions, the reason being the different social characteristics of the environments in which the education centres are located. The private centres are located in residential areas where the economic status and educational level of inhabitants are significantly higher than in the areas where the public centres are located. We could even go as far as to describe the areas as two different social environments. If we consider that social class and family background play an important role in child education (Biblarz & Raftery, 1999; Pérez Sánchez et al., 2013), it seems likely that these factors will be reflected in the type of centre at which inhabitants are being educated.

In short, if we identify stereotyped, discriminatory prototypes, and lexical and cognitive gaps within the fields of experience under study, we will be in a position to provide suggestions for the improvement of educational curricula.

2. Theoretical framework

2.1 Studies of lexical availability

The available lexicon acquires meaning in the principle that certain words used frequently in a language are closely linked to the appearance of specific topics. By way of example, unless a military subject arises during conversation, it is unlikely that words such as "soldier", "barracks", or "artillery" will be mentioned in everyday communicative situations. The issue is not that these words are unknown to the general population, but that an individual is going to have difficulties using them unless a suitable topic arises.

In order to gather available (though not necessarily frequent) vocabulary, participants are presented with a number of stimuli – or thematic centres of interest – that initiate a process of lexical association (Aitchison, 1994; Nelson et al., 1997; Nelson et al., 2000). The centres of interest can include topics as diverse as "the human body", "the pandemic",

"colours", "the sea", "the city", "the environment", etc. Around these thematic nuclei, specific, related vocabulary emerges that is presumed to be the inventory used by the individual if a conversation takes the required course. In the methodology used to obtain lists of available vocabulary, the total number of words provided on each list is limited usually either by the individual's reaction time or by researchers setting a predefined limit. Words that come to mind first are assumed to be the most available, meaning it is the most available words that appear most often in the first positions on the lists. The lexical availability of a word is indicated using the lexical availability index (between 0 and 1), which is based on the number of times the word appears in the various positions on the lists analysed.

In short, this available vocabulary forms part of the mental lexicon of speakers, but it tends not to be used in linguistic exchanges unless a specific topic arises. Lists of available vocabulary have been used time and again in various fields, though the field in which they play the biggest role and have had the greatest impact is that of second language teaching (Gallardo, 2019; Paredes García, 2015; Rubio Lastra, 2020; Santos Díaz, 2017; Santos Díaz et al., 2020).

2.2 Fuzzy sets and the Index of Lexical Compatibility

A fuzzy set is defined by each element's degree of belonging to – or compatibility with – its set (Rosch et al., 1976). When used in models of representation, the elements – or words – in a set – or group –, show a gradual progression of compatibility with the concept represented by the set (Ávila-Muñoz & Sánchez-Sáez, 2014, pp. 133–159). As a result, different levels of compatibility can be established between the elements of a set and the set as a whole, instead of employing the belonging–not belonging dichotomy of classical set theory (Ávila-Muñoz & Sánchez-Sáez, 2010, pp. 37–81). This representation of reality can be applied to the field of lexical availability, allowing researchers to understand the categorical relations produced by a cognitive stimulus – or for a centre of interest – as well as the associations that result in the words on the lists.

In order to interpret all the lists provided as a metastructure for a specific shared category, we use fuzzy set theory due to its capacity to suitably represent this structure. Fuzzy set theory provides a reliable mathematical tool that allows us to determine the characteristic degree of compatibility of the fuzzy set: the FEV (Fuzzy Expected Value). By applying the FEV, we can establish objective limits for superior and inferior levels of compatibility (zones) within the fuzzy set created that do not depend on subjective perception. These limits directly relate the degree of compatibility of each element within a zone with an assessment of the size of the set of elements that exceed the zone in each case. Thus, we parameterise the process, allowing for an assessment of the size of each zone (Ávila-Muñoz & Sánchez-Sáez, 2010, pp. 61). This means we can organise the lexical elements into different zones according to their greater or lesser degree of compatibility with the community category obtained.

In short, when we combine the lexical networks of all the lists of available vocabulary analysed, this produces a metastructure and a fuzzy set. Each element (word) in the structure is assigned an Index of Lexical Compatibility (ILC, see Section 5.1), describing its compatibility with the fuzzy set. Hence, every word will be either more or less compatible with the metastructure of the fuzzy set, a fact that equates to each word's compatibility with the prototype proposed as the centre of interest. The resulting gradation of compatibility means we can use the FEV to classify the vocabulary into levels of compatibility.

Consequently, by applying fuzzy set theory to the field of lexical availability, we are in a position to obtain the following:

(1) The compatibility of each word with the shared metastructure. As described above, in a fuzzy category, we can determine the compatibility of each element with the fuzzy set produced by the community. In this approach, each word is related to the shared collective prototype (interpreted as a fuzzy set) through its compatibility with the prototype (Ávila-Muñoz & Sánchez-Sáez, 2014; de Vega, 1984; Lakoff, 1987a; Leiber, 1995; Wittgenstein, 1953).

(2) The shared social categorisation underlying the metastructure of the centre of interest, or in other words, the categorisation shared by the community regarding the proposed stimulus. We must not forget that the fuzzy set is a purely mathematical concept, while a categorisation is the cognitive process resulting from the application of the fuzzy set to lexical availability. Through the mathematical concept of "compatibility", we are linking the structure of the category interpreted as a fuzzy set with the cognitive process capable of producing a community category. Since we establish the levels of compatibility by applying the FEV, the approach offers the desired level of objectivity for the development of this work.

3. Materials and methods

As described above and in Section 5.1., the traditional methodology of lexical availability is based on a reliable mathematical model, and despite the simplicity with which this methodology extracts linguistic information, it has proved effective and incredibly useful in previous psycholinguistic and cognitive linguistic studies. Thus, associative tests triggered by a cognitive stimulus (word association tests) were used for the present work to obtain the lexical material required to construct the shared community prototypes. In such tests, participants spend two minutes writing down those words that they consider to be related to the stimulus.

Although the following sections present only the results obtained for the three stimuli *movimientos migratorios* 'migratory movements', *movimientos animalistas* 'animal rights movements', and *violencia de género* 'gender-based violence', the larger investigation that includes the present work examines the following categories:

(1) *Movimientos migratorios* 'migratory movements';

(2) *Movimientos feministas* 'feminist movements';

(3) *Cambio climático* 'climate change';

(4) *Movimientos animalistas* 'animal rights movements';

(5) *La violencia de género* 'gender-based violence';

(6) *Educación sexual* 'sex education';

(7) *La Constitución* 'the Spanish Constitution';

(8) *Movimientos políticos populistas* 'populist political movements';

(9) *Memoria histórica* 'historical memory';

(10) *Independentismo* 'separatism'.

To obtain the vocabulary that is prototypical of the stimuli considered in this work for the sample under study, we employed methods for analysis commonly used in research on lexical variation (Ávila-Muñoz et al., 2021). For this purpose, we used a previously developed piece of software called DispoCen, which consists of a library of tools using functional programming and implemented in R. DispoCen allows for the use of numerous models and applications and can instantly calculate the indices of lexical availability and lexical centrality. However, it can also take the analysis a step further and organise the words provided for a category into a shared structure consisting of different levels of centrality, with these levels being determined by the degree of compatibility of each word with the rest of the words provided. In this structure, level 0 corresponds to those words that do not belong to the nucleus of the centre of interest, in other words, to those words that are not generally compatible with the analysed set. Levels 1, 2, and 3 as well as subsequent levels represent an increasing degree of centrality and proximity to the prototypical nucleus of the centre of interest.

Once the words provided had been organised into levels of compatibility using DispoCen and the community prototype had been established, additional information collected via questionnaires allowed us to determine whether individual characteristics and family environment could be regarded as social determinants. The questionnaires were used to collect data relating to the social biography of participants' immediate family, participants' leisure and cultural habits, their contact with the media and social media, their attitudes towards certain social and linguistic phenomena, their contact with technology, etc. The information shared in these questionnaires by the research participants provided social values that we could transfer to the community: how they relate to the natural environment, animals, people different to themselves, etc.

Lastly, focus groups were organised to check the reliability of the results obtained after having processed and analysed the word lists provided by the students during the word association tests. Focus groups have traditionally been considered a flexible qualitative research technique that provides an approximation of reality, allowing researchers to study reality from within while in direct contact with the social phenomena

under study (Denzin & Lincoln, 2005). In the present work, however, this approach proved highly effective as a control mechanism for verifying the quantitative results, ensuring the reliability of the results obtained.

3.1 Sample

Given that one objective of this work is to identify areas of perception that have been recently acquired so as to suggest improvements to education, we worked with data from a sample of students enrolled in programmes reaching from the final years of secondary education to the final years of higher education in two cities in Andalusia, Spain (Malaga and Cadiz). We defined three observation groups: final year of compulsory secondary education (*Educación Secundaria Obligatoria)*, final year of high school (*Bachillerato*), and final year of a bachelor's degree (*Grado Universitario*). In the case of compulsory secondary education and high school, both public and private centres were considered. Table 1 presents the distribution of the sample.

Table 1. Distribution of the sample.

Educational level	Type of centre	Field of study	Malaga	Cadiz	TOTAL
Compulsory secondary education, final year	Public centre		n = 50	n = 50	N = 100
	Private centre		n = 50	n = 50	N = 100
High school, final year	Public centre	Sciences	n = 25	n = 25	N = 50
		Humanities and social sciences	n = 25	n = 25	N = 50
	Private centre	Sciences	n = 25	n = 25	N = 50
		Humanities and social sciences	n = 25	n = 25	N = 50
Bachelor's degree, final year	Public centre	Social sciences	n = 20	n = 20	N = 40
		Humanities	n = 20	n = 20	N = 40
		Health sciences	n = 20	n = 20	N = 40
		Sciences	n = 20	n = 20	N = 40
		Engineering	n = 20	n = 20	N = 40
TOTAL			N = 300	N = 300	N = 600

The data were collected during scheduled in-person visits to the various education centres during the academic year 2021/2022 (September 2021 to June 2022). Since many research participants were minors, we required the express consent of parents or legal guardians was required to obtain and analyse the data. The access to participants was ensured through signed collaboration agreements. These agreements also allowed us to formally communicate our results to the education centres, so as to keep them informed of progress regarding the research involving their students.

According to data from the National Statistics Institute (Instituto Nacional de Estadística, https://www.ine.es/ss/Satellite?c=Page&p=1254735905566&pagename=INE%2FINELayout&cid=1254735905566&L=1), inhabitants of the areas where the private centres under study are located present higher levels of formal education, higher household incomes, and more highly specialised professions than inhabitants of the areas where the public centres are located. These three variables have frequently been used as indicators of family social class since 1966, when Labov presented his paradigmatic study in New York (Labov, 1966). In later stages of the larger investigation that includes the present work, we plan to analyse the relevance of each of these predictors individually in our results. However, in this initial analysis, we simply used the type of education centre to represent all three factors.

4. Results

4.1 General statistics

Figure 1 shows the length of the lists obtained from all the individuals under study (N = 600) in connection with the three stimuli analysed ("migratory movements", "animal rights movements", and "gender-based violence"). The x-axis describes the length of the lists provided, and each point represents a certain number of words on a list. Thus, a point at for gender-based violence, for example, would mean that a participant produced a list consisting of 30 words for this stimulus. In addition, since several participants may have provided the same number of words, the size of the point indicates how many participants provided that same number. For details regarding the size of points and the numbers they represent, see the legend in Figure 1 under the heading "Accumulation of cases".

In order to present these general statistics in a more visual manner, Figure 1 uses boxplots. A boxplot is based on three measurements (Q1, median, Q3) and an estimation of the outliers in the distribution (indicated by the "whiskers"). The vertical line inside the box is the median, meaning half of the population is below and half is above this value. The two spaces between the median and the box limits represent 25% of the population both above and below the median. Thus, the distribution of the population is expressed as follows:

$$\underset{}{25\%} \;|\; \underset{Q1}{25\%} \;|\; \underset{Med}{25\%} \;|\; \underset{Q3}{25\%}$$

The "whiskers", or two horizontal lines that extend from the box, provide an estimation of the furthest "normal" values that would apply if the distribution was approximately "normal". Any points outside of these lines are independent and can be considered "outliers". In Figure 1, we can observe that for the three stimuli analysed, although there are outliers consisting of high numbers, most of the population under study is grouped within the expected "normal", meaning the results described in the following sections are representative of the sample under study.

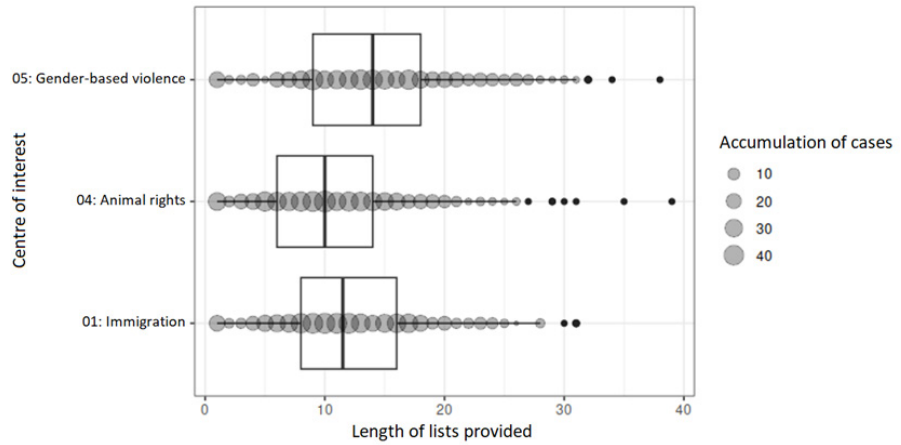


Figure 1. General statistics. Accumulation of cases.

4.2.Results by centre of interest

The general results obtained for each category are presented in the form of figures produced by the open-source software *WordClouds* (https://classic.wordclouds.com/). To facilitate interpretation, these figures show only the results for the level of maximum prototypicality in each case. This is the level comprising the words that are most compatible with their category, meaning they constitute the nucleus of the shared categorisation and depict the community's perception of the issue under study. In addition, for better visual portrayal in these figures, we have given greater weight to the words presenting a higher absolute frequency.

4.2.1 Migratory movements. General results

In 2014, Fine-Davis and Faas (2014) advised that teachers required tools to support their skills and competencies and to facilitate more inclusive and tolerant classrooms, with the purpose of addressing the religious, racial, and cultural diversity entailed by migratory movements. The authors focussed on a sample of 320 students and 208 teachers from Ireland, the UK, France, Latvia, Italy, and Spain, analysing their attitudes towards the phenomenon of diversity in general and encouraging the scientific community to continue the investigation.

Regarding the present study, Figure 2 reveals that the contextual reality of the geographic areas in which the data were collected is reflected in the words that constitute the shared category. Recall that Malaga and Cadiz, the two speech communities under study, are two cities in southern Spain, meaning they see high levels of immigration from the north of Africa. This may be the reason for the prominent position of the words *inmigrante* 'immigrant', *negro* 'black person', *patera* 'small boat', *pobreza* 'poverty', and

racismo 'racism'. The association of immigration with *problema* 'problem' and *conflicto* 'conflict' is striking, as is the association with the far-right Spanish political party Vox. The following sections present more specific results relating to the social groups under study.



Figure 2. General results. Migratory movements.

4.2.2 Migratory movements. Educational level

Table 2 presents the words included in the level of maximum prototypicality of each educational level considered regarding migratory movements. The words are organised according to their frequency of appearance in the lists. We have also emphasised certain words in the table, as they may be significant in the group's perception: highlighted in bold and underlined are certain words that only appear for one of the three groups; simply highlighted in bold are certain words that only appear for two of the three groups; and simply underlined are certain words that appear for all three groups but where a difference in frequency of appearance can be observed.

From the results in Table 2, we can see that the shared perception gradually changes as educational level increases. The higher the educational level, the lower the number of words that have a negative connotation. The youngest group of students even went as far as to provide *delincuencia* 'delinquency', while the group of university students was the only one to provide *oportunidad* 'opportunity', *cultura* 'culture', *miedo* 'fear', *derecho* 'right', and *legal* 'legal', the latter of which contrasts with *ilegal* 'illegal', provided only by the other two groups.

Table 2. Migratory movements. Educational level.

Centre of interest	Compulsory secondary education	High school	University
Migratory movements	*patera* 'small boat' *negro* 'black person' *inmigrante* 'immigrant' *país* 'country' *trabajo* 'work' *frontera* 'border' *persona* 'person' *guerra* 'war' *extranjero* 'foreigner' *África* 'Africa' *barco* 'boat' *pobreza* 'poverty' *muerte* 'death' ***ilegal* 'illegal'** *ayuda* 'help' *racismo* 'racism' *familia* 'family' *Marruecos* 'Morocco' ***mar* 'sea'** *dinero* 'money' *inmigración* 'immigration' ***delincuencia* 'delinquency'** *España* 'Spain' *huir* 'to flee' *viajar* 'to travel' *cambio* 'change' *valla* 'wall'	*patera* 'small boat' *negro* 'black person' *inmigrante* 'immigrant' *guerra* 'war' *trabajo* 'work' *África* 'Africa' *pobreza* 'poverty' *país* 'country' ***ilegal* 'illegal'** *extranjero* 'foreigner' *persona* 'person' *racismo* 'racism' *ayuda* 'help' *familia* 'family' *Marruecos* 'Morocco' *muerte* 'death' *frontera* 'border' *barco* 'boat' *valla* 'wall' ***discriminación* 'discrimination'** *Ucrania* 'Ukraine' *refugiado* 'refugee' ***moro* 'Arab'** ***necesidad* 'need'** ***injusticia* 'injustice'** *dinero* 'money' ***mar* 'sea'** ***tristeza* 'sadness'** *hambre* 'hunger' *vida* 'life'	*patera* 'small boat' *racismo* 'racism' *frontera* 'border' *persona* 'person' *extranjero* 'foreigner' *trabajo* 'work' *pobreza* 'poverty' *inmigrante* 'immigrant' *guerra* 'war' *país* 'country' ***necesidad* 'need'** *África* 'Africa' *negro* 'black person' *ayuda* 'help' *familia* 'family' ***oportunidad* 'opportunity'** *política* 'politics' ***cultura* 'culture'** ***injusticia* 'injustice'** *Vox* 'Vox' *dinero* 'money' *Marruecos* 'Morocco' *refugiado* 'refugee' *viaje* 'journey' *papeles* 'papers' *muerte* 'death' *economía* 'economy' ***tristeza* 'sadness'** ***miedo* 'fear'** *mena* 'unaccompanied foreign minors' ***derecho* 'right'** ***discriminación* 'discrimination'** ***legal* 'legal'**

4.2.3 Migratory movements. Type of centre (public/private)

The first part of Table 3 (above the line of separation) presents the words obtaining the highest Indices of Lexical Compatibility (ILCs) in this category for students at public centres, meaning these words are included in the level of maximum prototypicality for this group. Each word's ILC is compared with its ILC for students at private centres, where the word was not necessarily included in the level of maximum prototypicality. The second part of Table 3 (below the line of separation) presents words in any level of compatibility that simply show a significant difference between the indices obtained for the two types of centre.

Table 3. Migratory movements. Type of centre.

Word	ILC public centres	ILC private centres
patera 'small boat'	0.9961686	0.9999471
trabajo 'work'	0.9647823	0.7049926
inmigrante 'immigrant'	0.9191585	0.9434146
frontera 'border'	0.9173449	0.5508172
negro 'black person'	0.9172475	0.9965749
racismo 'racism'	0.9153842	0.7913813
necesidad 'need'	0.7187469	0.3616513
xenofobia 'xenophobia'	0.3050167	0.0678244
oportunidad 'opportunity'	0.5559345	0.1973123
cultura 'culture'	0.4843022	0.2665902
tristeza 'sadness'	0.5138097	0.3680571
pena 'sorrow'	0.3533612	0.0964122
valla 'wall'	0.4907781	0.7082927
sin papeles 'without papers'	0.0678332	0.5105562
rechazo 'rejection'	0.2982154	0.6473926
riesgo 'risk'	0.0701732	0.3852311
okupa 'squatter'	0.0108333	0.2736785
robo 'theft'	0.1152139	0.3623819
ilegalidad 'illegality'	0.0892047	0.3078041
paro 'unemployment'	0.0771550	0.2903616

Almost all the students at both types of centre associate the words *patera* 'small boat', *inmigrante* 'immigrant', and *negro* 'black person' with this phenomenon. However, differences between the two groups can be observed in the words *trabajo* 'work', *frontera* 'border', and *racismo* 'racism', which are significantly more compatible for the students at public centres.

The second part of Table 3 shows that the words *necesidad* 'need', *xenofobia* 'xenophobia', *oportunidad* 'opportunity', *cultura* 'culture', *tristeza* 'sadness', and *pena* 'sorrow' are also more compatible for students at public centres. Meanwhile, the words *valla* 'wall', *sin papeles* 'without papers', *rechazo* 'rejection', *riesgo* 'risk', *okupa* 'squatter', *robo* 'theft', *ilegalidad* 'illegality', and *paro* 'unemployment' are more compatible for students at private centres and refer to negative connotations or rejection.

4.2.4 Migratory movements. Gender identity

Gender identity seems to play a substantial role in determining perception since we have identified highly significant differences for all three categories, as shown below.

In Table 4, the 20 most compatible words are listed according to their general ILC, and their general ILC is compared with the ILC they obtain for men and women.

As is evident, the perceptions held by men and women differ in certain respects: the words *negro* 'black person', *frontera* 'border', *África* 'Africa', and *ilegal* 'illegal' are more compatible among men and describe the problem, whereas women build their perceptions around the words *país* 'country', *ayuda* 'help', *familia* 'family', and *necesidad* 'need'.

Table 4. Migratory movements. Gender identity I.

Word	ILC general	ILC men	ILC women
patera 'small boat'	0.9993485	0.9987485	0.9949058
negro 'black person'	0.9708908	0.9932601	0.7603543
trabajo 'work'	0.9671623	0.9222318	0.9379769
inmigrante 'immigrant'	0.9547893	0.9649064	0.8521882
guerra 'war'	0.9468946	0.9179428	0.8887088
país 'country'	0.9369550	0.8273929	0.9147521
pobreza 'poverty'	0.9263570	0.8838338	0.8641747
racismo 'racism'	0.9205250	0.9083473	0.8276946
persona 'person'	0.9158461	0.8465738	0.8677508
extranjero 'foreigner'	0.9156313	0.8947484	0.8333712
frontera 'border'	0.9085385	0.9478744	0.6999336
África 'Africa'	0.8988496	0.9069291	0.7647208
ilegal 'illegal'	0.8913020	0.9278564	0.6818465
ayuda 'help'	0.8388971	0.6645127	0.8043583
familia 'family'	0.8151982	0.6523778	0.7771711
muerte 'death'	0.7844474	0.6932053	0.7101806
barco 'boat'	0.7418035	0.5885925	0.6937857
Marruecos 'Morocco'	0.7327239	0.7781030	0.5302377
necesidad 'need'	0.9993485	0.9987485	0.9949058
dinero 'money'	0.9708908	0.9932601	0.7603543

Table 5 broadens the view to words showing significant differences between the two groups but contained in any level of compatibility.

We can observe here that the perception held by women is more closely related to *empatía* 'empathy', *solidaridad* 'solidarity', *cambio* 'change', and family (*niño* 'child', *hogar* 'home'), while the perception held by men features words that are more geographical (*Ceuta* 'Ceuta', *Melilla* 'Melilla', *Marruecos* 'Morocco', *España* 'Spain'), controversial (*robo* 'theft', *ilegal* 'illegal', *ilegalidad* 'illegality', *sobrepoblación* 'overpopulation', *policía* 'police', *mafia* 'mafia', *conflicto* 'conflict'), or political (*Vox* 'Vox', *política* 'politics').

Table 5. Migratory movements. Gender identity II.

Word	ILC men	ILC women
Ceuta 'Ceuta'	0.5577277	0.0273734
Melilla 'Melilla'	0.5994694	0.0856952
valla 'wall'	0.6889957	0.2956604
moro 'Arab'	0.6342226	0.2645840
refugiado 'refugee'	0.6294529	0.2887988
saltar 'to jump'	0.3357902	0.0226444
Vox 'Vox'	0.5935399	0.2928826
robo 'theft'	0.2801184	0.0081250
aduana 'customs'	0.3217265	0.0585896
frontera 'border'	0.9478744	0.6999336
Marruecos 'Morocco'	0.7781030	0.5302377
España 'Spain'	0.4309309	0.1843043
ilegal 'illegal'	0.9278564	0.6818465
ilegalidad 'illegality'	0.2876217	0.0541138
negro 'black person'	0.9932601	0.7603543
política 'politics'	0.6437026	0.4166880
sobrepoblación 'overpopulation'	0.2550103	0.0326642
raza 'race'	0.4881416	0.2695160
barrera 'barrier'	0.2709026	0.0578962
mena 'unaccompanied foreign minors'	0.4686798	0.2642311
policía 'police'	0.5633304	0.3638529
emigrante 'migrant'	0.2440000	0.0516244
mafia 'mafia'	0.2534346	0.0644421
muerto 'dead'	0.2546861	0.0677177
chino 'Chinese'	0.2800533	0.0980086
conflicto 'conflict'	0.3273649	0.1517173
cambio 'change'	0.1937114	0.4857288
solidaridad 'solidarity'	0.1365204	0.3757466
idioma 'language'	0.0789357	0.3148409
niño 'child'	0.2559723	0.4602573
nacionalidad 'nationality'	0.0200000	0.2064869
empatía 'empathy'	0.2314463	0.4175851
gente 'people'	0.1300000	0.3125425
sociedad 'society'	0.1024822	0.2828694
hogar 'home'	0.0731636	0.2526326

Notes: The words above the line of separation present a higher ILC for men; the words below the line of separation present a higher ILC for women.

4.2.5 Migratory movements. Type of centre and gender identity

Due to the differences observed between students at private and public centres as well as men and women, we would like to identify whether combining the two factors influences the conceptualisations in any way. Table 6 presents the words with the highest general ILCs and includes the specific ILCs obtained for the different groups according to the two factors.

Table 6. Migratory movements. Comparison of general and specific ILC.

Word	ILC general	ILC men, public	ILC women, public	ILC men, private	ILC women, private
trabajo 'work'	0.9671623	0.8770899	0.9715711	0.5653811	0.6168988
persona 'person'	0.9158461	0.7630378	0.7389398	0.5072208	0.6981600
extranjero 'foreigner'	0.9156313	0.8847488	0.6700537	0.3066667	0.7888845
frontera 'border'	0.9085385	0.9276427	0.5631570	0.6297044	0.2784000
ayuda 'help'	0.8388971	0.5900769	0.7245512	0.3964800	0.6528373
política 'politics'	0.6029197	0.3047291	0.1197257	0.4592000	0.2024123
ilegal 'illegal'	0.8913020	0.6253936	0.5927106	0.9211047	0.7406934

For the students at public centres, gender identity proves irrelevant, and we can observe a tendency towards seeing this phenomenon from the human perspective (*persona* 'person', *trabajo* 'work', *ayuda* 'help'). For the students at private centres, gender identity also proves irrelevant, but here we can observe political and legal nuances (*política* 'politics', *ilegal* 'illegal'). The low ILC of *extranjero* 'foreigner' for men at private centres (0.3066667) compared to the other groups is striking.

If we focus on only men or women, the type of centre seems to become essential. Table 7 shows the biggest differences in ILC between men enrolled at public and private centres.

The categorisations clearly differ for men depending on whether they are enrolled at public or private centres. For those at public centres, we can observe *familia* 'family', *empatía* 'empathy', and words that describe the phenomenon from the human perspective (*persona* 'person', *trabajo* 'work', *ayuda* 'help'). For those at private centres on the other hand, we can observe words with political connotations and words that link migratory movements to problems and illegality.

Similar differences emerge in the categorisations for women, and Table 8 reflects the most significant differences in this respect.

Table 7. Migratory movements. ILC of men at public and private centres.

Word	ILC men, public	ILC men, private	diff
extranjero 'foreigner'	0.8847488	0.3066667	0.5780821
dinero 'money'	0.6008663	0.2067635	0.3941028
familia 'family'	0.5345428	0.2227394	0.3118034
trabajo 'work'	0.8770899	0.5653811	0.3117088
frontera 'border'	0.9276427	0.6297044	0.2979383
persona 'person'	0.7630378	0.5072208	0.2558171
ayuda 'help'	0.5900769	0.3964800	0.1935969
sufrimiento 'suffering'	0.2619293	0.0800000	0.1819293
miedo 'fear'	0.3128939	0.1409524	0.1719415
empatía 'empathy'	0.1868187	0.0470588	0.1397599
crisis 'crisis'	0.3348426	0.2000000	0.1348426
necesidad 'need'	0.4821419	0.3665389	0.1156031
mena 'unaccompanied foreign minors'	0.1143569	0.5367506	0.4223937
papeles 'papers'	0.2114810	0.6130380	0.4015569
problema 'problem'	0.0693918	0.4369231	0.3675313
sin papeles 'without papers'	0.0616667	0.4000000	0.3383333
ilegal 'illegal'	0.6253936	0.9211047	0.2957111
chino 'Chinese'	0.1521079	0.4133333	0.2612254
Vox 'Vox'	0.2500816	0.5010400	0.2509584
política 'politics'	0.3047291	0.4592000	0.1544709

Notes: The words above the line of separation present a higher ILC for men at public centres; the words below the line of separation present a higher ILC for men at private centres.

As can be observed, Table 8 confirms the tendencies identified above for men: women at public centres give greater relevance to words describing the phenomenon from the human perspective, whereas those at private centres provide words with more negative connotations and words indicating rejection.

Table 8. Migratory movements. ILC of women at public and private centres.

Word	ILC women, public	ILC women, private	diff
vida 'life'	0.4944574	0.1200000	0.3744574
trabajo 'work'	0.9715711	0.6168988	0.3546723
cambio 'change'	0.5587911	0.2300000	0.3287911
avión 'aeroplane'	0.3931947	0.0702041	0.3229906
frontera 'border'	0.5631570	0.2784000	0.2847570
comida 'food'	0.3888843	0.1291594	0.2597249
dolor 'pain'	0.3391715	0.0907143	0.2484572
economía 'economy'	0.3571410	0.1161905	0.2409505
necesidad 'need'	0.4411546	0.2256000	0.2155546
tristeza 'sadness'	0.5516560	0.3989413	0.1527148
dinero 'money'	0.4032223	0.2609250	0.1422973
pena 'sorrow'	0.2273058	0.0857143	0.1415915
raza 'race'	0.1717976	0.2827281	0.1109305
mena 'unaccompanied foreign minors'	0.0900000	0.2000000	0.1100000
sin papeles 'without papers'	0.1023000	0.4564985	0.3541985
chino 'Chinese'	0.0400000	0.3600000	0.3200000
peligro 'danger'	0.0977924	0.4100403	0.3122479
Cruz Roja 'Red Cross'	0.3372387	0.6068037	0.2695650
racismo 'racism'	0.5642365	0.7239715	0.1597350
ilegal 'illegal'	0.5927106	0.7406934	0.1479827

Notes: The words above the line of separation present a higher ILC for women at public centres; the words below the line of separation present a higher ILC for women at private centres.

4.3 Animal rights movements. General results

In the characterisation of animal rights movements presented in Figure 3, we find words that seem to justify the existence of these movements (*maltrato* 'maltreatment', *cuidar* 'to look after', *ayuda* 'help') as well as words relating to consumption habits (*vegetariano* 'vegetarian', *vegano* 'vegan') and the characteristic spirit of protest and of raising social awareness (*lucha* 'struggle', *manifestación* 'demonstration', *derecho* 'right').



Figure 3. General results. Animal rights movements.

Analysis reflecting the sociocultural determinants considered in this work will help us to gain a better understanding of this community perception.

4.3.1 Animal rights movements. Educational level

Table 9 presents the words included in the level of maximum prototypicality of each educational level considered regarding animal rights movements.

The similarities between the perceptions held by these three groups are self-evident. Overall, they imply a general respect towards animals, with university students extending this to include *naturaleza* 'nature'. The group of university students is also the only one to have provided *igualdad* 'equality', a word that adds the human perspective to their perception of the phenomenon. Similarly interesting is the appearance across all educational levels of the world of bullfighting, with *antitaurino* 'anti-bullfighting' appearing for all three groups.

4.3.2 Animal rights movements. Type of centre (public/private)

Table 10 shows that the words attaining the highest ILC are the same for the two types of centre considered.

Table 9. Animal rights movements. Educational level.

Centre of interest	Compulsory secondary education	High school	University
Animal rights movements	*animal* 'animal' *vegano* 'vegan' *perro* 'dog' *protección* 'protection' *vegetariano* 'vegetarian' *maltrato* 'maltreatment' *persona* 'person' *toro* 'bull' *gato* 'cat' *amor* 'love' *ayuda* 'help' *cuidar* 'to look after' *matadero* 'slaughterhouse' *PACMA* 'PACMA' *antitaurino* 'anti-bullfighting' ***manifestación* 'demonstration'** *cuidado* 'care' *ayudar* 'to help' *vida* 'life' ***zoológico* 'zoological'** ***extinción* 'extinction'** ***león* 'lion'** *proteger* 'to protect' *veganismo* 'veganism' ***caza* 'hunting'**	*animal* 'animal' *protección* 'protection' *PACMA* 'PACMA' *perro* 'dog' *vegetariano* 'vegetarian' *maltrato* 'maltreatment' *vegano* 'vegan' *derecho* 'right' *cuidado* 'care' *persona* 'person' *toro* 'bull' *política* 'politics' *gato* 'cat' *defensa* 'defence' ***carne* 'meat'** *amor* 'love' *ayuda* 'help' ***mascota* 'pet'** *vida* 'life' *veganismo* 'veganism' ***empatía* 'empathy'** *lucha* 'struggle' ***tauromaquia* 'bullfighting'** ***extinción* 'extinction'** *antitaurino* 'anti-bullfighting' *cuidar* 'to look after' ***abandono* 'neglect'**	*animal* 'animal' *vegano* 'vegan' *vegetariano* 'vegetarian' *derecho* 'right' *protección* 'protection' *perro* 'dog' *maltrato* 'maltreatment' *persona* 'person' *PACMA* 'PACMA' *amor* 'love' *lucha* 'struggle' *defensa* 'defence' *política* 'politics' *vida* 'life' *cuidado* 'care' *respeto* 'respect' ***naturaleza* 'nature'** *movimiento* 'movement' ***empatía* 'empathy'** *toro* 'bull' *veganismo* 'veganism' ***carne* 'meat'** ***mascota* 'pet'** *gato* 'cat' *ayuda* 'help' ***abandono* 'neglect'** ***manifestación* 'demonstration'** *cuidar* 'to look after' ***igualdad* 'equality'** *antitaurino* 'anti-bullfighting' *proteger* 'to protect' ***caza* 'hunting'**

Notes: In **bold and underlined:** words that only appear for one of the three groups; only in **bold**: certain words that appear for two of the three groups; only underlined: certain words that appear for all three groups but where a difference in frequency of appearance can be observed.

Table 10. Animal rights movements. Type of centre I.

Word	ILC public centres	ILC private centres
animal 'animal'	0.9999874	0.9999612
vegano 'vegan'	0.9599040	0.9778746
protección 'protection'	0.9382153	0.9751917
vegetariano 'vegetarian'	0.9479035	0.9524643

However, interesting differences are revealed in Table 11, which presents the words that obtain the biggest differences in ILC irrespective of their level of compatibility. The first part of the table (above the line of separation) presents the words that obtain the highest ILC for students at public centres. These relate almost exclusively to protection (*proteger* 'to protect', *protectora* 'animal shelter', *ayuda* 'help', *cuidar* 'to look after', *ayudar* 'to help', *abandono* 'neglect', *maltrato* 'maltreatment'), emotion (*cariño* 'affection', *amor* 'love'), and animal rights (*derecho* 'right', *igualdad* 'equality', *respeto* 'respect').

The second part of the table (below the line of separation) presents the words that obtain a higher ILC for students at private centres. We can observe a clear difference here, with these words relating either to bullfighting (*tauromaquia* 'bullfighting', *toro* 'bull', *corrida de toros* 'bull fight') or politics (*político* 'politician', *política* 'politics', *Podemos* 'Podemos', *chiringuito* 'beach bar'). This last word (*chiringuito* 'beach bar') refers by semantic extension to political corruption.

Table 11. Animal rights movements. Type of centre II.

Word	ILC public centres	ILC private centres
proteger 'to protect'	0.5436316	0.1120611
persona 'person'	0.8284955	0.3978775
cariño 'affection'	0.4641505	0.0383333
vida 'life'	0.6981224	0.3008400
protectora 'animal shelter'	0.4647289	0.1152788
ayuda 'help'	0.6888394	0.3433546
amor 'love'	0.7504322	0.4441979
abandono 'neglect'	0.5570646	0.2537027
igualdad 'equality'	0.4925885	0.2300000
respeto 'respect'	0.5144168	0.2962625
maltrato 'maltreatment'	0.9067693	0.6521773
cuidar 'to look after'	0.6564308	0.4249917
derecho 'right'	0.9154849	0.6258089
ayudar 'to help'	0.3379972	0.0511111
tauromaquia 'bullfighting'	0.3774829	0.6407255
corrida (de toros) '(bull) fight'	0.0048148	0.3480667
toro 'bull'	0.5953429	0.8873418
Podemos 'Podemos'	0.0522167	0.2806000
política 'politics'	0.4796137	0.8836565
chiringuito 'beach bar'	0.0185714	0.2300000
político 'politician'	0.0300385	0.2300000

Notes: The words above the line of separation present a higher ILC for students at public centres; the words below the line of separation present a higher ILC for students at private centres.

4.3.3. Animal rights movements. Gender identity

Here, Figure 4 offers a visual representation of the differences between the two groups as well as the many words with very low compatibility that were provided by both (agglomeration of points in the bottom left corner of Figure 4, irrelevant for the characterisation of the shared prototype). We can again observe a significant difference between men and women in terms of the nature and connotations of the words provided more frequently by each group. The words with an ILC of above 0.50 in the case of women and below 0.50 in the case of men relate, again, to emotions and feelings (*amor* 'love', *abandono* 'neglect', *cuidar* 'to look after', *cariño* 'affection', although the latter lies just under the limit of 0.50 for women), as well as to the characteristic spirit of struggle and protest (*lucha* 'struggle', *política* 'politics'). Meanwhile, the words obtaining the opposite, meaning an ILC of above 0.50 for men and below 0.50 for women, include *toro* 'bull', *carne* 'meat', *caza* 'hunting', and *tauromaquia* 'bullfighting'.

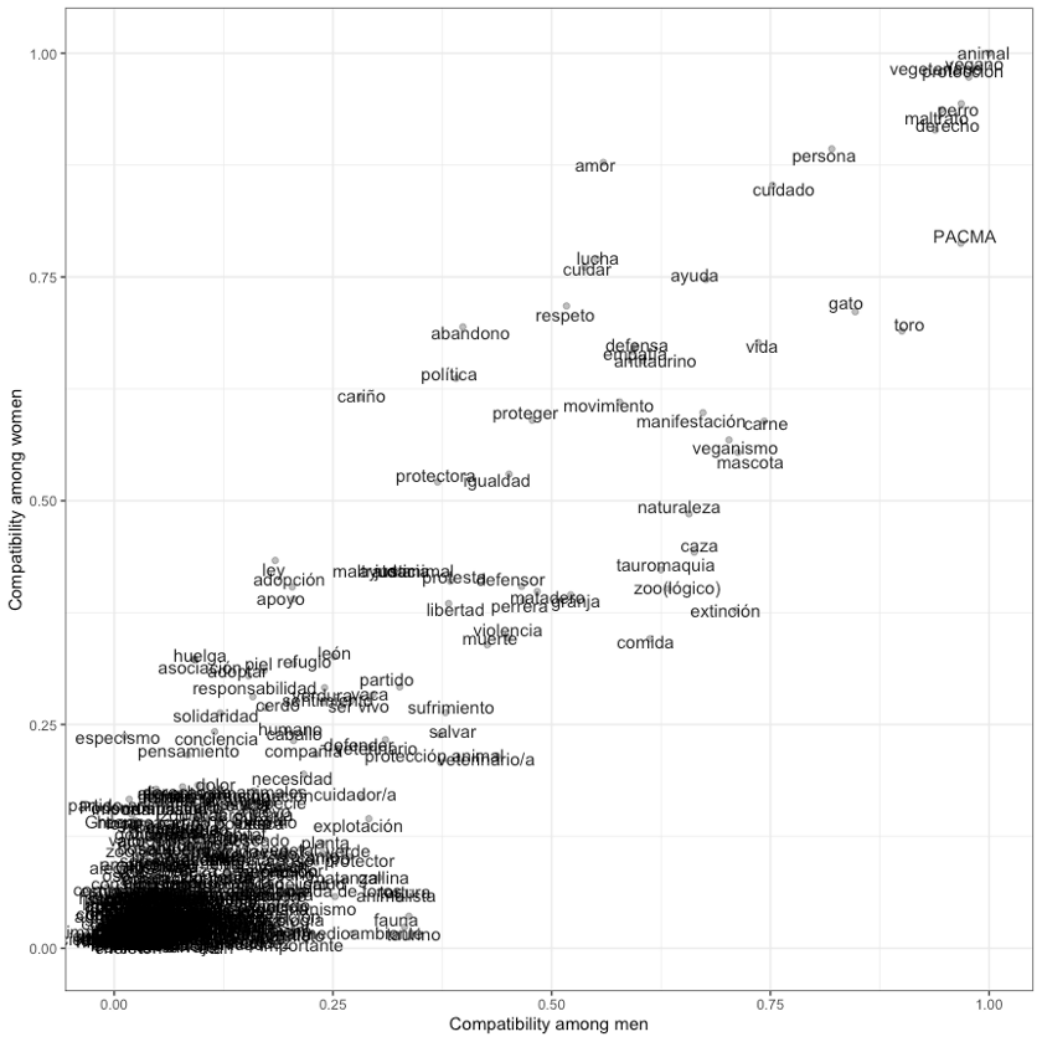


Figure 4. Animal rights movements. Gender identity.

4.3.4 Animal rights movements. Type of centre and gender identity

Table 12 presents the words obtaining the highest general ILCs for this category and compares it with the specific ILCs obtained in each case for the groups under study.

Table 12. Animal rights movements. Comparison of general and specific ILC.

Word	ILC general	ILC men, public	ILC women, public	ILC men, private	ILC women, private
animal 'animal'	0.9999985	0.9999742	0.9999806	0.9998015	0.9994090
maltrato 'maltreatment'	0.9196230	0.8674026	0.9107663	0.4115552	0.6030309
derecho 'right'	0.9072857	0.6834791	0.7390629	0.6040000	0.3904990
PACMA 'PACMA'	0.8804997	0.8494248	0.6409647	0.7154733	0.5835000
persona 'person'	0.8367290	0.7048382	0.8296569	0.3840000	0.1500000
cuidado 'care'	0.7710037	0.4503801	0.7535416	0.3504762	0.3941200
ayuda 'help'	0.6889419	0.5896996	0.6794660	0.3066667	0.2520000
política 'politics'	0.6192866	0.0528571	0.1192004	0.7840000	0.8193789
veganismo 'veganism'	0.6036621	0.1200567	0.1552000	0.4133333	0.4240000
vegano 'vegan'	0.9778993	0.8442982	0.7780725	0.9378981	0.9527590
antitaurino 'anti-bullfighting'	0.5998457	0.2352583	0.1446000	0.7285658	0.8320652
empatía 'empathy'	0.5959223	0.2621644	0.4407622	0.1698765	0.4880000
tauromaquia 'bullfighting'	0.4681299	0.3885456	0.0984485	0.7633778	0.2000000
toro 'bull'	0.7733572	0.6176034	0.2759826	0.9348244	0.4743467
matadero 'slaughterhouse'	0.4189024	0.1381187	0.1197818	0.8020754	0.7314595

Notes: The words above the line of separation generally present a higher ILC for students at public centres; the words below the line of separation generally present a higher ILC for students at private centres.

We can observe first differences in the ILCs of words relating to food (*veganismo* 'veganism', *vegano* 'vegan', *matadero* 'slaughterhouse'). These show a tendency towards being more significant among men and women at private centres. The association with politics and bullfighting is also highly significant for these two groups.

On the other hand, men and women at public centres give relevance to *cuidado* 'care', *ayuda* 'help', and words that describe the phenomenon from the human perspective (*persona* 'person' and, again, *ayuda* 'help'). Overall, the high ILC of the Spanish political party PACMA is significant here, as it is more representative for men than women regardless of the type of centre.

Table 13 presents the words with the biggest differences in ILC between men and women at public centres.

Table 13. Animal rights movements. ILC for men and women at public centres.

Word	ILC men, public	ILC women, public
extinción 'extinction'	0.7256022	0.1044934
veganismo 'veganism'	0.5200567	0.1552000
toro 'bull'	0.6176034	0.2759826
caza 'hunting'	0.5120825	0.2192054
tauromaquia 'bullfighting'	0.3885456	0.0984485
adopción 'adoption'	0.0430557	0.4489620
abandono 'neglect'	0.1484625	0.5228318
justicia 'justice'	0.0264286	0.3637750
cuidado 'care'	0.4503801	0.7535416
respeto 'respect'	0.0847156	0.3786396

Notes: The words above the line of separation present a higher ILC for men at public centres; the words below the line of separation present a higher ILC for women at public centres.

We can observe that, at public centres, sentimental words and words linking to active involvement are more significant among women than men. As shown in Table 14, the sentimental connotation prevails for women at private centres, although the active participation disappears, while men, again, give relevance to words related to bullfighting.

Table 14. Animal rights movements. ILC for men and women at private centres.

Word	ILC men, private	ILC women, private	diff
tauromaquia 'bullfighting'	0.7633778	0.2000000	0.5633778
movimiento 'movement'	0.6189460	0.1500000	0.4689460
toro 'bull'	0.9348244	0.4743467	0.4604778
zoo(lógico) 'zoo(logical)'	0.7971407	0.4585500	0.3385907
mascota 'pet'	0.4584532	0.2198095	0.2386437
persona 'person'	0.3840000	0.1500000	0.2340000
salvación 'salvation'	0.3840000	0.1500000	0.2340000
perro 'dog'	0.7171328	0.4882389	0.2288939
ley 'law'	0.0571429	0.2860000	0.2288571
empatía 'empathy'	0.1698765	0.4880000	0.3181235
violencia 'violence'	0.0727273	0.3051429	0.2324156

The differences in perception between men at public centres and men at private centres are also relevant, as demonstrated in Table 15.

Table 15. Animal rights movements. ILC for men at public and private centres.

Word	ILC men, public	ILC men, private	diff
maltrato 'maltreatment'	0.8674026	0.4115552	0.4558474
veterinario 'vet'	0.6058203	0.1617778	0.4440425
defensor 'defender'	0.5293763	0.0888889	0.4404874
persona 'person'	0.7048382	0.3840000	0.3208382
carne 'meat'	0.5402674	0.2210909	0.3191765
ayuda 'help'	0.5896996	0.3066667	0.2830329
protectora 'animal shelter'	0.3545804	0.0727273	0.2818531
comida 'food'	0.4069777	0.2405118	0.1664659
extinción 'extinction'	0.7256022	0.5666944	0.1589078
política 'politics'	0.0528571	0.7840000	0.7311429
matadero 'slaughterhouse'	0.1381187	0.8020754	0.6639567
justicia 'justice'	0.0264286	0.5200000	0.4935714
zoo(lógico) 'zoo(logical)'	0.3986498	0.7971407	0.3984910
tauromaquia 'bullfighting'	0.3885456	0.7633778	0.3748322
salvación 'salvation'	0.0231250	0.3840000	0.3608750
toro 'bull'	0.6176034	0.9348244	0.3172210
lucha 'struggle'	0.2745625	0.5200000	0.2454375
protesta 'protest'	0.0740000	0.3125348	0.2385348

Notes: The words above the line of separation present a higher ILC for men at public centres; the words below the line of separation present a higher ILC for men at private centres.

At private centres, words relating to bullfighting and politics are once again more significant as well as the words *lucha* 'struggle' and *protesta* 'protest', whereas at public centres, it is the human perspective that is again more evident. This tendency is corroborated in the comparison with the results obtained for women at public and private centres, as represented in the top left, top right, and bottom right extremes of Figure 5 (the bottom left encompasses words with a very low ILC, meaning they are insignificant in the categorisation produced by the group).

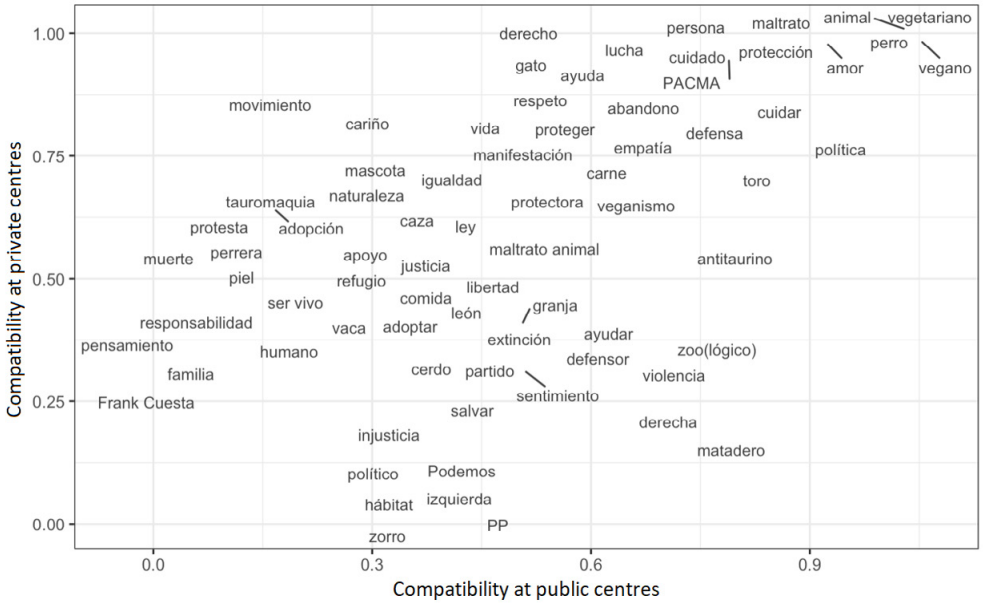


Figure 5. Animal rights movements. ILC of women at public and private centres.

The results presented above regarding animal rights movements are broadly similar to those of recent works aiming to identify the sociological characteristics that determine student attitudes towards animal rights and use by society. Bennett-Wimbush et al. (2015), for example, demonstrated that the variables gender, age, and home residence of their 136 participants were indeed significant. Particularly women between the ages of 17 and 20 living in non-urban environments proved more aware of animal rights and welfare.

4.4 Gender-based violence. General results

Gender-based violence is a serious public health issue that requires early intervention. Professionals note that difficulties in addressing gender-based violence include the lack and distortion of information regarding the issue. Many studies have revealed incorrect attitudes and perceptions among students at all levels of education, describing inadequate or insufficient teaching of the subject as the cause (Diéguez Méndez et al., 2020; Ferrer Pérez et al., 2006). In addition, recent works have shown that providing education early on is an important factor in changing the attitudes of young people and preventing gender-based violence (Currier & Carlson, 2009).

In connection with the present work, Figure 6 presents the entire sample's shared perception regarding gender-based violence. All students perceive this issue as very serious, as revealed by words such as *asesinato* 'murder', *desigualdad* 'inequality', *injusticia* 'injustice', *agresión* 'aggression', *muerte* 'death', and *violación* 'violation'. The words *ayuda* 'help', *denuncia* 'report', and *derecho* 'right' refer to possible solutions, and other words indicate what the sample seems to identify as the source of the issue: *hombre* 'man', *machista* 'sexist'. Finally, words referring to emotions are also included: *miedo* 'fear', *sufrimiento* 'suffering', *dolor* 'pain'.



Figure 6. General results. Gender-based violence.

4.4.1 Gender-based violence. Educational level

Table 16 presents the words included in the level of maximum prototypicality of each educational level considered regarding gender-based violence.

Based on the very similar results obtained for each group, we can conclude that gender-based violence is an issue that causes serious concern at all three educational levels. Nevertheless, the group of university students does stand out, as this was the only one to provide words relating to the family environment (*familia* 'family', *hogar* 'home', *pareja* 'partner', *hijo* 'son/daughter') and to perceive this phenomenon as a problem suffered by victims (*problema* 'problem', *víctima* 'victim'). Meanwhile, students enrolled in compulsory secondary education were the only ones to provide *denuncia falsa* 'false accusation' and *exagerado* 'exaggerated'. These words are a cause for concern, as they could indicate a distorted perception of this phenomenon among the youngest population under study.

4.4.2 Gender-based violence. Type of centre (public/private)

Although the words with the highest ILC are the same for both types of centre (*mujer* 'woman', *maltrato* 'maltreatment', *hombre* 'man', *machismo* 'machismo', *violencia* 'violence'), we can observe notable differences in the words obtaining the biggest differences in ILC irrespective of their level of compatibility, as shown in Table 17.

Table 16. Gender-based violence. Educational level.

Centre of interest	Compulsory secondary education	High school	University
Gender-based violence	*mujer* 'woman' *maltrato* 'maltreatment' *hombre* 'man' *machismo* 'machismo' *violación* 'violation' *violencia* 'violence' *muerte* 'death' *feminismo* 'feminism' *miedo* 'fear' *agresión* 'aggression' *pegar* 'to hit' *abuso* 'abuse' *igualdad* 'equality' *machista* 'sexist' *injusticia* 'injustice' *asesinato* 'murder' *pelea* 'argument' *acoso* 'harassment' ***denuncia* falsa 'false accusation'** *desigualdad* 'inequality' *ayuda* 'help' *feminista* 'feminist' *cárcel* 'prison' *golpe* 'strike' *dolor* 'pain' *psicológico* 'psychological' *lucha* 'struggle' *moretón* 'bruise' ***exagerado* 'exaggerated'**	*mujer* 'woman' *hombre* 'man' *machismo* 'machismo' *maltrato* 'maltreatment' *violencia* 'violence' *muerte* 'death' *violación* 'violation' *abuso* 'abuse' *desigualdad* 'inequality' *feminismo* 'feminism' *asesinato* 'murder' *miedo* 'fear' *injusticia* 'injustice' ***ley* 'law'** *pegar* 'to hit' *agresión* 'aggression' *acoso* 'harassment' *igualdad* 'equality' *dolor* 'pain' *denuncia* 'report' *físico* 'physical' *lucha* 'struggle' *ayuda* 'help' *cárcel* 'prison' *superioridad* 'superiority' *pelea* 'argument' *daño* 'harm' *psicológico* 'psychological' *sufrimiento* 'suffering' *policía* 'police'	*mujer* 'woman' *machismo* 'machismo' *maltrato* 'maltreatment' *hombre* 'man' *muerte* 'death' *violencia* 'violence' *feminismo* 'feminism' *dolor* 'pain' *desigualdad* 'inequality' *miedo* 'fear' *ayuda* 'help' *igualdad* 'equality' *lucha* 'struggle' *injusticia* 'injustice' *abuso* 'abuse' *violación* 'violation' *golpe* 'strike' ***problema* 'problem'** *denuncia* 'report' *asesinato* 'murder' ***víctima* 'victim'** *psicológico* 'psychological' ***familia* 'family'** ***hogar* 'home'** *cárcel* 'prison' *acoso* 'harassment' *físico* 'physical' ***ley* 'law'** ***pareja* 'partner'** ***protección* 'protection'** *tristeza* 'sadness' *derecho* 'right' ***hijo* 'son/daughter'** *psicología* 'psychology'

Notes: In **bold and underlined**: words that only appear for one of the three groups; only in **bold**: certain words that appear for two of the three groups.

Table 17. Gender-based violence. Type of centre.

Word	ILC public centre	ILC private centre
feminismo 'feminism'	0.7796637	0.9405251
feminista 'feminist'	0.1861851	0.5616668
abuso 'abuse'	0.7529421	0.8525307
desigualdad 'inequality'	0.6629894	0.8480935
injusticia 'injustice'	0.6102292	0.9350579
discriminación 'discrimination'	0.2242342	0.4189445
mentira 'lie'	0.2037384	0.5940843
mala 'bad'	0.0433333	0.2300000
016 '016'	0.3216332	0.5153744
ayuda 'help'	0.7295399	0.4177590
psicológico 'psychological'	0.5616585	0.2870291
derecho 'right'	0.4441351	0.2927877
justicia 'justice'	0.3356398	0.0907919
pareja 'partner'	0.4635637	0.2629271
problema 'problem'	0.4932958	0.1177381
familia 'family'	0.4479110	0.2437710
niño 'child'	0.3508039	0.1032125
hogar 'home'	0.3758290	0.1648310
hijo 'son/daughter'	0.3877566	0.1929976
pena 'sorrow'	0.2730791	0.0383333
dolor 'pain'	0.7332792	0.5022335

Notes: The words above the line of separation present a higher ILC for students at private centres; the words below the line of separation present a higher ILC for students at public centres.

At private centres, gender-based violence is identified with *feminismo* 'feminism', *abuso* 'abuse', *desigualdad* 'inequality', and *injusticia* 'injustice'. The appearance of *feminismo* 'feminism' and *feminista* 'feminist' stands out here. These two words lead us to interpret other words provided with caution (*abuso* 'abuse', *desigualdad* 'inequality', *injusticia* 'injustice', *discriminación* 'discrimination'), as it is unclear whether they are linked to a misinterpretation of the feminist movements or to an actual sexist perception of gender-based violence. The words *mentira* 'lie' and *mala* 'bad' point more towards the first of these two interpretations. At the same time, however, the telephone helpline 016 for victims of gender-based violence in Spain does seem to be more present for this group.

At public centres, the words obtaining a higher ILC describe the issue as a problem that affects the domestic environment (*problema* 'problem', *familia* 'family', *pareja* 'partner', *niño* 'child', *hogar* 'home', *hijo* 'son/daughter') and that requires different forms of help (*psicológico* 'psychological', *derecho* 'right', *justicia* 'justice'). Certain words alluding to feelings and emotions are also more present here (*pena* 'sorrow', *dolor* 'pain').

4.4.3 Gender-based violence. Gender identity

In the levels of maximum prototypicality for gender-based violence by gender identity, no significant differences can be observed. This is demonstrated by Table 18, which presents the words that obtain a general ILC of over 0.90 and indicates the specific ILC they obtain for men and women.

Table 18. Gender-based violence. Gender identity I.

Word	ILC general	ILC men	ILC women
mujer 'woman'	0.9998888	0.9994206	0.9991195
maltrato 'maltreatment'	0.9993565	0.9976568	0.9965132
hombre 'man'	0.9990731	0.9985515	0.9925861
machismo 'machismo'	0.9974576	0.9926571	0.9902239
muerte 'death'	0.9701567	0.9159631	0.9491055
violencia 'violence'	0.9589164	0.9707622	0.8513772

Differences between these two groups are only revealed if we expand the comparison to include words in any level of compatibility. Table 19 reveals these differences – and they certainly warrant reflection.

In our view, the perception held by men regarding gender-based violence contains a concerning distortion of reality. We have therefore underlined the words in Table 19 that were most surprising due to their implications: *denuncia falsa* 'false accusation', *mentira* 'lie', *política* 'politics', *feminista* 'feminist', *feminazi* 'feminazi', *desigualdad* 'inequality', *discriminación* 'discrimination', *injusto* 'unfair', and *feminismo* 'feminism'. Most of these obtain a very high ILC, making them very characteristic of men's shared perception regarding this phenomenon.

Meanwhile, women feel *miedo* 'fear' and *peligro* 'danger' in the face of a situation that affects them more directly and that, more so than men, they identify with *pareja* 'partner' and *hogar* 'home'. This may be why we can observe here the need to fight and gain recognition (*lucha* 'struggle', *25N* '25 November'). In this sense, however, the date 8 March stands out due to its absence from the level of maximum prototypicality, since it is a frequently used symbol of the fight for equality between men and women and the eradication of gender-based violence.

Table 19. Gender-based violence. Gender identity II.

Word	ILC men	ILC women
denuncia falsa 'false accusation'	0.4213163	0.0260875
mentira 'lie'	0.4776369	0.1197978
política 'politics'	0.4234162	0.0995964
feminista 'feminist'	0.4605985	0.1643183
feminazi 'feminazi'	0.2765514	0.0162500
desigualdad 'inequality'	0.8355920	0.6111341
discriminación 'discrimination'	0.3663221	0.1418968
injusto 'unfair'	0.3332578	0.1206046
feminismo 'feminism'	0.9070950	0.6981746
opresión 'oppression'	0.2440280	0.0903580
crimen 'crime'	0.3519335	0.0144444
manada 'group/La Manada'	0.3336560	0.0100000
cárcel 'prison'	0.7284015	0.4172009
protesta 'protest'	0.2702120	0.1214912
hogar 'home'	0.1934786	0.3399651
25N '25 November'	0.0500000	0.1896838
lucha 'struggle'	0.3772004	0.6690732
pareja 'partner'	0.3065175	0.4865272
peligro 'danger'	0.1466797	0.3243971
miedo 'fear'	0.6615028	0.8345655
paliza 'beating'	0.1735435	0.3457610
insulto 'insult'	0.2713708	0.4389208

Notes: The words above the line of separation present a higher ILC for men; the words below the line of separation present a higher ILC for women.

4.4.4 Gender-based violence. Type of centre and gender identity

In Table 20, we present the words with the highest general ILCs and the specific ILCs they obtain for each of the groups analysed.

Table 20. Gender-based violence. Comparison of general and specific ILC.

Word	ILC general	ILC men, public	ILC women, public	ILC men, private	ILC women, private
mujer 'woman'	0.9998888	0.9982504	0.9985226	0.9946064	0.9941818
maltrato 'maltreatment'	0.9993565	0.9961664	0.9989411	0.9566344	0.9930699
hombre 'man'	0.9990731	0.9930703	0.9871949	0.9932165	0.9560642
machismo 'machismo'	0.9974576	0.9757611	0.9629610	0.9821774	0.9911747
muerte 'death'	0.9701567	0.8960101	0.9273774	0.4163304	0.8830611
violencia 'violence'	0.9589164	0.9322583	0.8203897	0.9149677	0.8709499
violación 'violation'	0.9328294	0.8311804	0.8460827	0.9775480	0.9192215
feminismo 'feminism'	0.8798729	0.7138703	0.3829889	0.9355541	0.7975646
miedo 'fear'	0.8537508	0.5072934	0.8768207	0.3546331	0.7998326
abuso 'abuse'	0.8333308	0.6190697	0.7466074	0.9091939	0.5454512
desigualdad 'inequality'	0.8110112	0.4693112	0.3808379	0.7421133	0.7327125

The initial four words are very characteristic for all groups (*mujer* 'woman', *maltrato* 'maltreatment', *hombre* 'man', *machismo* 'machismo'), but notable differences emerge from thereon. First, women at public centres consider the word *muerte* 'death' to be incredibly important, whereas men at private centres give it a noticeably lower ILC, and the other two groups give it ILCs in between these two. Second, *violencia* 'violence' is more characteristic for men than women regardless of type of centre. Third, *feminismo* 'feminism' obtains a significantly lower ILC for women at public centres (0.3829889) as compared to all other groups, including women at private centres (0.7975646). Fourth, the feeling of *miedo* 'fear' is more present for women than men. Fifth, the word *abuso* 'abuse' assumes great importance for men at private centres, and finally, sixth, the word *desigualdad* 'inequality' is particularly significant for both men and women at private centres.

The biggest differences between men and women at public centres are presented in Table 21. We can observe here that for women at public centres, the consequences of gender-based violence predominate (*moretón* 'bruise', *miedo* 'fear', *psicológico* 'psychological', *golpe* 'strike', *físico* 'physical') as well as the need to fight (*lucha* 'struggle'), whereas for men, it is the penal consequences of gender-based violence (*cárcel* 'prison') as well as *discriminación* 'discrimination' and *feminismo* 'feminism' that obtain higher ILCs.

Similar tendencies (except in the case of *cárcel* 'prison', now scoring higher for women than men) can be observed in Table 22, which presents the biggest differences between men and women at private centres.

Table 21. Comparison of ILC for men and women at public centres.

Word	ILC men, public	ILC women, public	diff
moretón 'bruise'	0.0185000	0.4370555	0.4185555
miedo 'fear'	0.5072934	0.8768207	0.3695273
psicológico 'psychological'	0.2141287	0.5833818	0.3692531
golpe 'strike'	0.2379726	0.5966594	0.3586868
físico 'physical'	0.2112127	0.5158399	0.3046272
lucha 'struggle'	0.2554730	0.5572010	0.3017280
discriminación 'discrimination'	0.3068465	0.0327273	0.2741192
cárcel 'prison'	0.6854839	0.2688415	0.4166424
feminismo 'feminism'	0.7138703	0.3829889	0.3308814

Table 22. Comparison of ILC for men and women at private centres.

Word	ILC men, private	ILC women, private	diff
lucha 'struggle'	0.1000000	0.5923409	0.4923409
muerte 'death'	0.4163304	0.8830611	0.4667307
miedo 'fear'	0.3546331	0.7998326	0.4451994
manifestación 'demonstration'	0.1851429	0.5198201	0.3346772
cárcel 'prison'	0.2481143	0.5462935	0.2981792
ayuda 'help'	0.1615238	0.4118433	0.2503195
pelea 'argument'	0.1333333	0.3743360	0.2410027
injusticia 'injustice'	0.6950800	0.9336194	0.2385394
morado 'purple'	0.0727273	0.3005714	0.2278442
denuncia 'report'	0.4399547	0.6637040	0.2237492
mentira 'lie'	0.7639052	0.0666667	0.6972385
abuso 'abuse'	0.9091939	0.5454512	0.3637427
feminista 'feminist'	0.6550400	0.3000000	0.3550400
discriminación 'discrimination'	0.4624000	0.2066667	0.2557333
sexo 'sex'	0.3253333	0.0750000	0.2503333

Notes: The words above the line of separation present a higher ILC for women at private centres; the words below the line of separation present a higher ILC for men at private centres.

Despite the similarities noted above, some of the words appearing for men at private centres warrant reflection: the higher ILCs obtained for the words *mentira* 'lie', *abuso* 'abuse', *feminista* 'feminist', and *discriminación* 'discrimination' are alarming indicators.

Furthermore, the appearance of the word *sexo* 'sex' is highly significant. Table 23 presents a comparison between men at private centres and men at public centres to identify whether the tendencies observed in Table 22 for men at private centres differ in any way.

Table 23. Comparison of ILC for men at public and private centres.

Word	ILC men, public	ILC men, private	diff
pelea 'argument'	0.6572453	0.1333333	0.5239120
muerte 'death'	0.8960101	0.4163304	0.4796797
cárcel 'prison'	0.6854839	0.2481143	0.4373696
ayuda 'help'	0.5604823	0.1615238	0.3989585
sangre 'blood'	0.4102414	0.0615385	0.3487030
pegar 'to hit'	0.8466520	0.5626074	0.2840446
denuncia 'report'	0.6688225	0.4399547	0.2288677
matar 'to kill'	0.2935469	0.1142857	0.1792612
machista 'sexist'	0.5011831	0.3319184	0.1692648
lucha 'struggle'	0.2554730	0.1000000	0.1554730
miedo 'fear'	0.5072934	0.3546331	0.1526603
padre 'father'	0.0308333	0.1795556	0.1487222
psicología 'psychology'	0.2046389	0.0571429	0.1474961
violación 'violation'	0.8311804	0.9775480	0.1463676
arma 'weapon'	0.0284615	0.1741176	0.1456561
herida 'injury'	0.2403640	0.1000000	0.1403640
acoso 'harassment'	0.6475453	0.5097143	0.1378311
manifestación 'demonstration'	0.3205896	0.1851429	0.1354468
sufrimiento 'suffering'	0.3169448	0.2012630	0.1156817
pareja 'partner'	0.2501386	0.1345455	0.1155931
problema 'problem'	0.1700547	0.0666667	0.1033880
psicológico 'psychological'	0.2141287	0.1115897	0.1025390
mentira 'lie'	0.2453100	0.7639052	0.5185952
feminista 'feminist'	0.2412203	0.6550400	0.4138197
injusticia 'injustice'	0.3944407	0.6950800	0.3006392
abuso 'abuse'	0.6190697	0.9091939	0.2901242
sexo 'sex'	0.0370000	0.3253333	0.2883333
desigualdad 'inequality'	0.4693112	0.7421133	0.2728020
víctima 'victim'	0.0217647	0.2666667	0.2449020
feminismo 'feminism'	0.7138703	0.9355541	0.2216838
injusto 'unfair'	0.1850000	0.4000000	0.2150000
016 '016'	0.2877739	0.4624000	0.1746261
discriminación 'discrimination'	0.3068465	0.4624000	0.1555535

Below the line of separation in Table 23, we have included other words mentioned above during the course of this analysis, as we feel they indicate a very serious problem in the perception of gender-based violence held by men at private centres: *mentira* 'lie', *feminista* 'feminist', *injusticia* 'injustice', *abuso* 'abuse', *sexo* 'sex', *desigualdad* 'inequality', *víctima* 'victim', *feminismo* 'feminism', *injusto* 'unfair', *016* '016', and *discriminación* 'discrimination'. Table 23 shows that these words obtain higher ILCs for men at private centres, meaning the problem in perception is specific to this group.

Figure 7 presents the biggest differences in ILC between women at public and private centres. As can be observed, the problem in perception is unfortunately not exclusive to men; it also seems to apply to women at private centres. To demonstrate the gravity of the results obtained, we have circled the words obtaining an ILC higher than 0.50 for women at private centres.

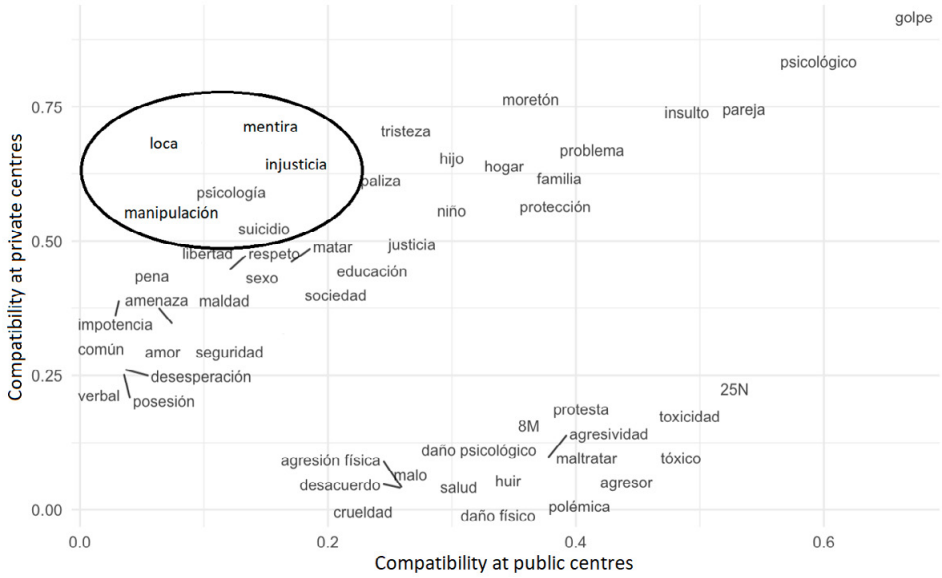


Figure 7. Comparison of ILC for women at public and private centres.

5. Discussion

5.1 Lexical availability and the Index of Lexical Compatibility

Lexical availability is based on a relatively simple principle: members of the same speech community share a vocabulary linked to certain very frequently observed cognitive prototypes. In the case of tests of lexical availability, these prototypes are usually presented to participants in the form of centres of interest (Ávila-Muñoz & Sánchez-Sáez, 2010). For the purpose of this work, we adapted the lexical availability index, described in Section 2.1., from being an attribute of individual words to being a community indicator. This transformation assumes that the stimulus that initiates the association process is an access point to a network of lexical elements perceived by the participant as interrelated as well as related to the concept proposed via the stimulus (centre of interest). The structure

of this network is subjective and inherent to the individual, meaning it cannot be strictly extrapolated to other research participants. It is also highly dynamic since it is constantly being modified. Nevertheless, for several reasons including both social and cultural factors, individuals do construct similar lexical structures. We consider the shared sociocultural metastructure to constitute the vocabulary of the community cognitive prototype. In other words, the shared community prototype does not exist in itself but is rather produced by a group of speakers. It is possible and even plausible that changing the group of speakers would therefore change the shared metastructure.

It is natural to assume that when an individual is asked to provide a list of available vocabulary, they first access lexical elements closest to the shared concept proposed via the cognitive stimulus (centre of interest). They then move through their lexical network in the direction of words that are further from this access point, always providing the most accessible words and generally travelling via words that are related in their personal lexical network. They also may re-enter their lexical network via a new access point when they feel they have travelled too far (Ávila-Muñoz & Sanchez-Sáez, 2011).

Based on this approach, the structure of a cognitive prototype is considered to consist of a nucleus – accessible to all speakers in a speech community – and a periphery – accessible to individuals depending on various factors including higher lexical diversity (Villena Ponsoda et al., 2023). The progression from nucleus to periphery is gradual rather than abrupt. These foundations of lexical availability allow for the development of the model underlying the Index of Lexical Compatibility (ILC), and it is this index that we used in the present study to provide the quantifications needed to produce the structure and, thus, the community cognitive prototypes. The ILC results from a theoretical approach that allows us to translate the model underlying studies of lexical availability into a consolidated mathematical framework. This framework permits the interpretation of compatibility as an index (between 0, minimum compatibility, and 1, maximum compatibility) within the context of fuzzy set theory (Zadeh, 1965; Zimmermann, 2001) and, in our specific approach, that of possibility theory (Zadeh, 1978). The ILC provides the truest possible picture of the shared structures. However, other approaches could also be used, and we believe it would be advantageous – even ideal – to explore them in future stages of our research.

5.2 Migratory movements

The phenomenon of migratory movements is one of the most serious causes for concern of the European Union. This is not only because the EU must guarantee population flows between its member states (Meltzer et al., 2018) but also because its geographical borders have seen too many humanitarian crises. The reality in which the EU must operate encompasses diverse social, cultural, and religious traditions, and the region it represents has become a place of refuge for people from different races, religions, ethnicities, and nationalities. It is therefore unsurprising that the EU aims to raise awareness among

its citizens for the need to adapt to an increasingly globalised world, in which there is constant interaction with people of different cultures, customs, and languages (Rudiger & Spencer, 2003).

This being the case, identifying the shared perceptions regarding this phenomenon held by students in one of the border regions of the EU (Malaga and Cadiz, both in southern Spain, which presents a natural border of the EU with the north of Africa) is a matter of great importance and absolutely in line with the need to raise awareness in society so as to avoid conflicts stemming from distorted perceptions. To this effect, the appearance of words such as *problema* 'problem' and *conflicto* 'conflict' in the results obtained should lead us to reflect above all on whether their appearance is linked to the rise of far-right political parties (*Vox* 'Vox', also provided by participants). Equally concerning is the appearance of words such as *delincuencia* 'delinquency' and *ilegalidad* 'illegality' among students with the lowest educational level considered. However, we should remain relatively optimistic, since, as observed above, words such as *cultura* 'culture', *derecho* 'right', and *oportunidad* 'opportunity' appear for students enrolled in the highest educational level – which presumably indicates a higher degree of maturity and analytical capacity. Be that as it may, the students at private centres show a tendency to provide words more closely related to negative perceptions of the phenomenon, while those at public centres show this to a lesser degree. The same tendency also seems more closely linked to masculine than feminine gender identity.

5.3 Animal rights movements

The phenomenon of animal rights movements has led to a change in relationship between animals and the general population as compared to a few years ago, with this change affecting various social and legal aspects of society (Jacobsson & Lindblom, 2022; Pelé et al., 2021).

Studies that reach us from the US suggest that these movements are endorsed by women of upper-middle class who consider themselves independent of political approaches though of moderately liberal ideology (Jamison & Lunch, 1992). Jamison and Lunch suggest that animal rights activism is part of a symbolic manifestation that interlaces egalitarian social and political views of scientific and technological change, meaning it is worth identifying the perception held by the population under study here with regard to these movements. The results obtained seem to corroborate that the phenomenon revolves around a general advocacy of rights. This is combined with a spirit of protest targeting issues beyond those strictly related to animal welfare and specifically supporting non-traditional approaches to diet (*vegetariano* 'vegetarian', *vegano* 'vegan') and therefore lifestyles that are more in tune with the environment.

5.4 Gender-based violence

The presence of gender-based violence in society in the twenty-first century is a complete disgrace. International associations such as the UN Refugee Agency (https://www.unhcr.org/gender-based-violence.html), the UN (https://www.unfpa.org/gender-based-violence), UNICEF (https://www.unicef.org/protection/gender-based-violence-in-emergencies), and even the EU (https://commission.europa.eu/strategy-and-policy/policies/justice-and-fundamental-rights/gender-equality/gender-based-violence/what-gender-based-violence_en) caution of the dangers it presents at the global level. Such is the scale of international concern that there are scientific journals focussing solely on this phenomenon, including the *Journal of Gender-Based Violence*. The effects of gender-based violence are not only physical but also mental. In this respect, it is concerning that for the university population in the United Kingdom, for example, it has in fact been necessary to create a list of recommendations to help victims in this collective (Rakshasa-Loots, 2022).

The results obtained in the present work show that the population under study considers this phenomenon a source of concern, although they do not seem to consider it a possibility in the domestic context. This at least applies to the students enrolled in compulsory secondary and pre-university education, as these did not provide vocabulary relating to gender-based violence in the family environment. Nevertheless, numerous recent studies show that the phenomenon can end up being even more tragic at these educational levels than in others more prominently referred to in society, specifically due to the silence and resignation of victims in these groups (Banks et al., 2008; Brännvall & Ekström, 2022; Dutton, 1993; Fahmy et al., 2018; Gill & Anitha, 2022; Hamilton, 2009; Hester, 2013; Hester & Westmarland, 2005; Imkaan, 2016; Kanyeredzi, 2018; Kourti et al., 2021; Notko et al., 2022; Peckover & Golding, 2017; Rajah & Osborn, [2020] 2022; Zhang, 2022).

We believe it is imperative to focus on the prevention of gender-based violence and raise awareness in the vulnerable population – especially in those enrolled in education – of the need to identify, and react to, the deplorable actions that constitute gender-based violence. Many studies show that young people tolerate and may even justify situations that can be classed as gender-based violence more often than one might expect (Lucariello & Fajardo Caldera, 2011; Pérez Camarero, 2019; Rivera-Rivera et al., 2006; Valdemoro Pascual & Peyró Arcas, 2009).

Against this background, the present study provides cause for reflection due to the appearance of certain words for the youngest group of participants considered: *denuncia falsa* 'false accusation' and *exagerado* 'exaggerated'. There is no doubt that these words demonstrate a need to implement educational programmes to reinforce this issue, which will help individuals to detect behaviours that may be classed as gender-based violence and allow for the development of shared perceptions that improve our society and protect vulnerable groups.

6. Conclusions

This work represents an advancement within the area of studies on lexical variation in terms of theory, methodology, and possibilities, which pertain principally to sociolinguistic and psychocognitive aspects of a community.

In this work, we have observed the social impact of three phenomena that are of socio-community significance – migratory movements, animal rights movements, and gender-based violence –, and we have done so based on word association tests that have allowed us to construct and analyse shared categorisations. All three phenomena have become issues of community concern at the international level that, in some cases, have become entwined with ideology. We have observed how the Spanish compulsory secondary, pre-university and university students under study construct shared categorisations regarding these phenomena. By combining the lists of available vocabulary provided by the individuals, we have obtained snapshots depicting the shared perceptions. The interpretation of these snapshots as fuzzy sets has allowed us to access the words that are most compatible with the fuzzy set obtained, and the comparisons made between certain social characteristics have led to results that mean we can now revisit the starting hypothesis and conclude the following:

(1) The student population analysed in this study exhibits a strong social awareness of the stimuli proposed. This social awareness suggests that there has been a change in the traditional lifestyle patterns, in our relationship with the environment and our fellow human beings, and even in our eating habits.

(2) Despite the foregoing, some deficits in perception have been observed for students enrolled in the lowest level of education considered, based on certain words appearing in the level of maximum prototypicality for this group.

(3) When the analysis is expanded to include the full shared perceptions (all the levels of compatibility), these gaps become more apparent for students enrolled at private centres than for those at public centres, and, in general, more apparent among men than women.

(4) Regarding migratory movements, we have obtained words suggesting that particularly the students enrolled in the lowest level of education associate this phenomenon more with conflict, delinquency, and illegality than with culture and an opportunity to learn. These associations become more concerning where far-right political parties also appear.

(5) The animal rights movements paint a fairly homogenous picture for the population under study, with the individual social characteristics not showing any effect. In line with previous studies, a concern for the environment and nature in general seems to underpin the concern for animal rights, and this concern is even linked to changes in lifestyle affecting aspects as fundamental as diet.

(6) As for gender-based violence, we have observed words that suggest limited or distorted information primarily among men (although also among women) enrolled at private centres for compulsory secondary and pre-university education. These individuals construct their prototypes using words such as *denuncia falsa* 'false accusation', *feminazi* 'feminazi', *mentira* 'lie', *loca* 'crazy', and *injusto* 'unfair'. It is worth mentioning that, in some cases, the problem is considered to arise outside of the home. This indicates a community perception regarding gender-based violence that is incorrect to a certain degree and that could lead to harmful behaviours in the private environment remaining unidentified.

Finally, we suggest that the agents involved in teaching and training students enrolled in compulsory secondary, pre-university and university education become aware of the results obtained in this study, and that they promote measures designed to both mitigate the deficits in perception observed and reinforce areas that appear to be well established. It is partly in their hands that lies the responsibility to construct fairer, more egalitarian societies that are more respectful of the environment and the individual.

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