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## **Emotion and sentiment polarity in parliamentary debate. A pragmatic comparative study.**

### **Abstract**

An ever-increasing interest on the expression of emotions can be seen in the proliferation of studies from different perspectives; medical – psychological, sociological, linguistic, or computer based, to name but a few. From a pragmalinguistic standpoint, ethnopragmatics is interested in the cross-cultural study of emotion.

The present confrontation in political discussion, aggravated by the pandemic sanitary crisis, invites an exploration of political debate. Traditionally, political discussion has been studied from a discourse analysis viewpoint. New investigations, able to compile abundant amount of data in order to provide different contexts of political language, can complement these views. The present paper shows a comparative study of a set of session diaries of the Valencian and the Scottish Parliaments during 2020. Its aim was to identify the basic emotion words used in the debate sessions, to investigate them from a cross-cultural perspective and to establish whether these emotion words are culturally transferable, in terms of meaning, use and polarity. The methodology used, corpus linguistics, permits quantitative and qualitative analyses of the corpus assembled. Results show that there exist significant differences in the use of terms in the two subcorpora, and that even when the same words are used in the two contexts, they don't necessarily infer the same emotions and sentiments – nor the same polarity. The comparison also elucidates the usefulness of existing emotion lexicons for this kind of research.

**Keywords:** emotion words, lexicon, political discourse, corpus analysis, pragmatics.

### **1. Introduction**

An innovative subject for study is the expression of emotions. Indeed, in a world more interconnected than ever, the study of emotions expressed in all sorts of genres and contexts is of interest from several perspectives and for different objectives. Disciplines that approach such studies range from second language acquisition, to computer mediated communication or even therapeutic. Consequently, emotions are being analysed from an increasing number of perspectives, such as medical – psychological, neuronal (Kassam et al., 2013; Uljarevic et al., 2012), sociological (Barbalet, 2002, Bericat 2015, Patulny et al. 2020), or even commercial (Botha and Reyneke, 2013; Yung et al., 2021). From a slightly different perspective, sentiment analyses approach the study of emotion based on automatic Natural Language Processing (NLP) (Abbasi et al., 2008; Pozzi et al., 2016). Computer based approaches of the study of human

emotion are, for instance, being used for the implementation and development of the semantic web.

To assist linguistic studies, a series of emotion lexicons and other computer software tools have recently been developed. Correspondingly, the present study has scrutinised some of such lexicons so as to estimate their usefulness in the study of emotion in languages other than English. Here, one of the most active approaches to the language of emotions is pragmalinguistics, where two leading standpoints are being used – the ethnopragmatic perspective (Wierzbicka, 2004; Gladkova and Romero-Trillo, 2014; Goddard, 2014), which tries to identify emotion universals across languages, and the intercultural pragmatics perspective (Kecskes and Romero-Trillo, 2013), which supposes that individuals express themselves according to their own rules, focusing on expected communication problems which might arise from different interpretations.

With regards the topic chosen for analysis, politics is at present in the core of attention, as we live a time of particular polarisation and political confrontation in society, which has been aggravated by the sanitary crisis due to the pandemic. Political debate and discussion have been long studied from a discourse analysis viewpoint, including focuses on power, self-representation, or manipulation (Orwell, 1969; van Dijk 1993, 1998; Dunmire, 2012; Albalat-Mascarell and Carrió Pastor, 2019). The use of corpus linguistics allows for the study of weighty amount of data, and enables the completion of both quantitative and qualitative explorations, which can complement traditional discourse analysis research.

The present paper describes a comparative study of a set of session diaries of the Valencian and the Scottish Parliaments during the first months of 2020. The aims of the research were to identify the basic emotion words used in each context, so that they could be analysed from an ethnopragmatic perspective, in order to spot similarities and differences in the subcorpora analysed and the implications this has. The working hypotheses were that even in the case of coincidental emotions, the choice of the emotion words used differs depending on the language, both, in the choice of words, and in the number of occurrences. Also, that as most emotion expressions are culturally-dependant, polarities for such emotions would not necessarily be identical. Finally, that the existing lexicons are not fully reliable for languages other than English. The paper presents the following structure: after this introduction, there is a part dedicated to the theoretical framework supporting the research, which includes a revision of the pragmatic viewpoint used, as well as a look into political discourse, and the study of emotion words, examining some existing emotion software and lexicons. In section three, the methodology used for analysis is explained. Section four displays the results, whereas section five presents the conclusions and discussion.

## 2. Theoretical framework

Literature in this section includes different aspects considered in the investigation, stretching from pragmatics, to the subject matter analysed, which is the political discourse, and to emotion, as the specific subject of interest in the present study. Each of these is addressed in a different subsection.

### 2.1. Pragmatics

To describe but briefly Pragmatics, we will just give a general introduction and see the key aspects of the discipline. In general terms, Pragmatics is the study of the processes which occur in communication, considering the context of interaction and the actual use of the language.

This discipline has traditionally endorsed a universalist paradigm, aimed at finding norms and rules which could be used for all the languages and settings. Such were for instance Grice's 1975 conversational maxims, meant to account for the interest of cooperation and good will of the speaker for successful communication exchanges. The maxims do not take into account the language or the specific communication setting, but intend to be universal; they are the maxim of quality (do not say what you believe to be false or cannot support), the maxim of relevance (be relevant in your speech, don't say things that are not significant), the maxim of quantity (be as informative as required, but no more), the maxim of manner (be clear, concise, and orderly). Then, focus was set on the speaker, and speech appropriateness to ensure good communication.

Correspondingly, this was applied to courtesy and politeness (Brown and Levinson, 1978), or requests and apologies (Blum-Kulka et al., 1989), who offered proposals which continued establishing descriptive frameworks to given speech acts, unrelated to the speaker language or culture.

Pragmatics has been, in time, redefined as the use of language with communication purposes, considering the contexts in which communication occurs, and focusing on functions, and not on forms. A later approach, Sperber and Wilson's Relevance Theory (Sperber and Wilson, 1995; Wilson and Sperber, 2002) points at the need for both speaker and audience to entertain a common reality, so that whichever information that must be inferred is correctly interpreted. It is the audiences' inferences about the communicative intention of the speaker which matters in communication.

This has expanded and been applied to different languages, looking at language implementation not as minor deviations from the norm (English), but as cultural negotiations and realisations. Studies related to other languages have taken these basic tenets into consideration. For instance, well known are the studies about (im)politeness in Catalan or Spanish both in politics and other contexts (Escandell Vidal, 1995, 2005; Payrató, 1999, 2003a, 2003b; Portalés Llop, 2019), or, in some cases, of voluntary impoliteness, for instance, at court (Ridao, 2009; Ridao Rodrigo, 2016).

Of particular interest in the present study is political discourse in Catalan, considering for instance the construction of political discourse based on the role of metaphors (Todolí and Ribas, 2007), manipulation in political speech (Laborda 1997, 2012), political debate and ideology (Marín, 2007), or propaganda and marketing in political discourse (Bassols 2007).

### 2.1.1. Ethnoprismatic perspective to study emotion

As mentioned before, one of the most widely acknowledged viewpoints to deal with the study of emotion from a pragmatic viewpoint is the ethnoprismatic perspective (Wierzbicka, 2004, Gladkova and Romero-Trillo, 2014; Goddard, 2014; Romero-Trillo and Fuentes, 2014), also acknowledged as the cross-cultural perspective. It advocates for the search for the alphabet of human thoughts, in this case common emotions, directly linked to the quest for lexical universals, which are lexicalized concepts able to express emotions in a similar way worldwide, regardless of the linguistic background of the speakers. In relation to this, in the search for semantic primitives, there is a need to consider the role that a given concept plays in defining other concepts, and the range of languages in which it has been lexicalized.

To this, Chentsova-Dutton and Lyons (2016) argue that universality may be valid for some emotional phenomena, but that complex emotional responses, which are expressed in social interactions are not so easily identified and transferred among languages.

According to Goddard (2014), although most concepts analysed usually depart from the English language, and try to find equivalent counterparts in other languages, ethnoprismatics is characterized by a concern with cultural peculiarity, emphasising the need to avoid ethnocentrism in the metalanguage of description.

Based on similar contexts – which are the Scottish and Valencian Parliaments, the aim of the present paper is to compare the expression of emotions and their related feelings, and look into two aspects; on the one hand, whether emotions expressed are similar in expression and polarity, from an ethnoprismatics perspective, and on the other, to analyse whether the available tools to analyse big amounts of data are suitable to analyse the languages under scrutiny.

## 2.2. Political Debate

Through time, already in early political discourse analyses, politics has been characterised in terms of power, conflict, or domination (Giddens 1991; Bourdieu 1991; Fairclough 1995; Chilton and Schäffner 1997; van Dijk 1993, 1997, 2003, 2010; Ferrer Garcia, 2016), but also based on ideology (Wilson 1990, 1991, Van Dijk, 2005).

However, new circumstances derived from technology and other causes (political confrontation, economic crisis, new needs and new political proposals, such as participation in the decision-making process) are changing the way politicians communicate. Undeniably, in our time, political

debate is influenced by aspects such as constant worldwide broadcasting and transcribing, which permits its massive distribution, making it possible for it to be accessed asynchronously and repeatedly. Thus, when politicians speak, they are aware that they are not only addressing the audience in front of them, but the “wider” audience (Druckman et al, 2010, Stier et al. 2018; Albalat-Mascarell and Carrió Pastor, 2019). This is what Hess-Lüttich (2007) calls “show conversations”; debates that are rehearsed and represented in front of an audience, and which tend to be dramatized, exaggerated, or over-practised. Some studies even consider them posturing speech (Jungherr et al., 2016; Kreiss, D., 2016; Hess-Lüttich, 2007) or concentrate on the way communication rules are broken in order to achieve greater effect (Hess-Lüttich, 2007; Cuenca and Marín, 2006; Marín Jordà, 2006). Other works signal the recurrent use of emotions as a rhetorical tool in political contexts. In her analysis, Cislaru (2012) highlights the use of fear and anger as the two basic emotions used to stir political debate.

With regards the social and political background of the data analysed, albeit of different nature, we are facing moments of great political enervation, due to the rise of far-right parties, and the configuration of tight majorities (in the Valencian case), or to Brexit supporters vs. independence referendum promoters (in the Scottish case). Such situations introduce cases of heated arguments and passionate debates.

### 2.3. Lexicons

Technology permits the analysis of great amount of data. As a novel area of interest, emotions are inviting the development of new software. A snapshot of the tools nowadays available for the computer aided analysis of emotion is given below, so that we can view the possibilities and options at hand. One of the first tools developed was Linguistic Inquiry and Word Count (LIWC), by Pennebaker and Francis (2001), accessible at <https://liwc.wpengine.com/>. It only works for the English language, and is based on lists that employ rating scales for emotion, affect and personal concerns, which are populated with the introduction of new texts. This permits both, rerating of texts and improvement of lists. Texts are classified according to their text types, and emotions within identified correspondingly. The LIWC2015 version includes 6,400 words, word stems, and emoticons.

The Sentiment Analysis and Social Cognition Engine (SEANCE), by Crossley, Kyle and McNamara (2017), is accessible at <https://www.linguisticanalysistools.org/seance.html>. Contrary to LIWC, this tool is freely available, and includes negation and part-of-speech identification features. It also relies on pre-existing dictionaries, and word-vectors taken from pre-existing databases (SenticNet, and Emolex). Twenty component scores related to sentiment, social cognition, and social order are the foundation of this tool. This tool works only with the English language.

A different type of resource is Mohammad and Turney's 2010 Word-Emotion Association Lexicon (henceforth, NRC) (<https://saifmohammad.com/WebPages/NRC-Emotion-Lexicon.htm>). It is an inventory of English words put in relation to eight basic emotions (anger, fear, anticipation, trust, surprise, sadness, joy, and disgust) and two sentiments (negative and positive). Annotations are manually done by crowdsourcing. From their database in English, they have used Google Translate to offer similar lists in many other languages. This is where we want to pay special attention, as the tool is offered not only in English, but also in all the languages Google is able to translate into, disregarding the reliability of automatic translation, and the importance of taking into account language variation when dealing with automatic translation (Mas Castells, 2019). The number of available emotion words when the studies were carried out was 5,865, and it continues increasing as more texts are introduced for scrutiny.

Also, Rheault et al. (2016) present a NLP proposal, to produce domain-specific polarity lexicons by creating a vector space model using the GloVe algorithm. This model converts the vocabulary of a corpus into numerical vectors of 300 dimensions based on the matrix of word-word co-occurrences, after a manual selection of the 200 target words they choose to represent the positive and the negative poles.

Finally, the Merriam-Webster learner Dictionary (<https://www.merriam-webster.com/>) is a reference dictionary for students of English which offers a list of 72 basic emotion words. This is a simplification of Oatley's 1989 list of emotion words, which he divided into seven groups, depending on their semantic classification: a) generic emotions, b) basic emotions, c) emotional relations, d) caused emotions, e) causatives, f) emotional goals, g) complex emotions.

The tools available, therefore, make use of different libraries that determine the emotion words. Further differences can be highlighted in the tools, as some of them identify polarity, while others classify the words into basic emotions.

Unfortunately, none of these tools are designed to study Catalan or Spanish, but are based on English subcorpora, and, in the best of cases, depart from it using machine translation to propose terms in other languages. As our intention is to see whether they can be useful to analyse significant amounts of data in other languages, two of these tools are used in combination for the study: the Merriam-Webster list of emotions and SEANCE, as will be explained in detail in the methodology section.

### 3. Methodology

The purpose of the corpus study presented here is to identify emotion in political discourse in order to see when and how it is produced in two different contexts; the Scottish and the Valencian Parliaments. Its objectives are to identify the most commonly used expressions of emotion – or rather, emotion words, and to identify them with positive or negative poles (feelings), and to see whether the existing tools to deal with this amount of data are effective in all three languages analysed (Catalan, Spanish, and English). The particularities of the subcorpora and the specific analyses carried out for this are detailed below.

#### 3.1. Corpus

The official reports of meetings of 40 diaries of parliamentary sessions are analysed in the present paper. Two different subcorpora comprise it, as 20 of these parliamentary sessions were held in the Scottish parliament (Scottish subcorpus), and 20 in the Valencian parliament (Valencian subcorpus). They account for the last sessions which took place in 2020, and before the end of the month of September. The Valencian sessions include those ranging from Feb. 5, 2020 until Sept. 23, 2020. The texts used are the *Diaris de Sessions*. The Scottish sessions examined start on Aug. 5, 2020 and finish on Oct. 1, 2020, and they appear under the category *Meeting of the Parliament (Hybrid)*. The disparity in the period analysed is due to the frequency of the meetings. A total of 1,483,786 words were collected for the Scottish subcorpus, which is entirely in English, and a total of 865,118 for the Valencian subcorpus. The particularity of the Valencian subcorpus is that, because of co-officiality of languages, some speeches are delivered in Spanish, and other are pronounced in Catalan. This is very much related to ideology and social upbringing. However, the interest for the study is not to find differences and similarities between these two Roman languages (which can be expected to relate to ideology as much as to language), but to clarify whether the lexicons used to identify emotion words in languages other than English are reliable. Therefore, although the sets of terms have been identified for Catalan and Spanish, results are presented together.

#### 3.2. Analyses

Two types of analyses were completed for the present study. On the first hand, a quantitative analysis, in which the inventory of emotion words provided by the Merriam-Webster dictionary, assumed as the register of basic expressions of the basic emotions, was used as a base to identify the existing words in the texts, and also the poles these words relate to, considering the SEANCE proposal, in terms of positive or negative feelings. Then, a qualitative analysis, in which differences and similarities were spotted comparing the subcorpora.



### 3.2.1. Quantitative analysis: the lexis of emotion

First, a quantitative analysis of the texts was carried out, in order to identify the most frequently used words to describe emotion in each of the subcorpora. For the frequency examination of the words in English, Anthony's (2017) ProtAnt and AntConc tools were used. The procurement of the words in Spanish and in Catalan was manually obtained.

#### 3.2.1.1 English

First, the corpus was scrutinized in order to find the number of basic emotion words used in the talks, based on the aforementioned Dictionary (<https://learnersdictionary.com/3000-words/topic/emotions-vocabulary-english>), in order to delimitate whether these basic emotions are cross-culturally transferrable. Of all the 1,483,786 words in the Scottish subcorpus the results throw 6,654 of emotion tokens, that is, 0.004% of the corpus. Table 1 displays the words targeted for the study, in alphabetical order.

*Merriam-Webster Learner's Dictionary. Emotion words*

acceptance	dislike	loneliness
admiration	dismay	longing
affection	distress	love
aggravation	embarrassment	lust
anger	enthusiasm	malice
anguish	envy	misery
anxiety	envious	optimism
attraction	excitement	panic
boredom	fear	patience
caution	frustration	pessimism
certainty	fury	pity
compassion	generosity	sadness
confidence	greed	satisfaction
confusion	grief	satisfied
contentment	guilt	scorn
courage	happiness	shame
curiosity	hate	sorrow
defeat	hatred	sympathy
defiance	hope	terror
delight	horror	unhappiness
dependence	hostility	wonder
depression	impatience	wonderful
desire	jealousy	wrath
desirable	joy	
disappointment	kindness	

Table 1. Basic emotion words

The purpose of using this list was to tackle the most instinctive basic emotions. Note for instance that in this list of words (proposed by Merriam Webster), there is not an entrance for like, but there is for dislike, and the same happens with dependence, for which there is no independence counterpart. Table 2 displays the number of occurrences for each word encountered in the Scottish subcorpus, grouped according to number of occurrences.

<i>High frequency words</i>	<i>Medium frequency words</i>	<i>Low frequency words</i>	<i>One or no occurrences</i>	
<i>hope</i>	1062	aggravation 78	anger 20	desire 1
<i>affection</i>	536	sympathy 74	enthusiasm 20	wonder 1
<i>acceptance</i>	524	confusion 62	guilt 20	bore 0
<i>hate</i>	478	shame 58	hostility 20	contentment 0
<i>confidence</i>	420	desire 56	panic 20	curiosity 0
<i>happiness</i>	326	grief 56	misery 16	delight 0
<i>love</i>	316	compass 48	optimism 16	envy 0
<i>patience</i>	294	excitement 48	depression 12	fury 0
<i>certainty</i>	292	caution 46	embarrassment 12	impatience 0
<i>hatred</i>	282	defeat 44	dislike 8	jealousy 0
<i>sadness</i>	190	loneliness 44	dismay 8	joy 0
<i>dependence</i>	166	generosity 40	anguish 6	long 0
<i>attraction</i>	134	satisfaction 40	envy 4	lust 0
<i>fear</i>	118	courage 34	pity 4	pessimism 0
<i>anxiety</i>	114	malice 26	sorrow 4	scorn 0
<i>disappointment</i>	108	satisfaction 26	defiance 2	terror 0
<i>wonder</i>	94	admiration 22	greed 2	
<i>frustration</i>	90	horror 22	wrath 2	
<i>distress</i>	88			

Table 2. Occurrences in the Scottish subcorpus

### 3.2.1.2 Catalan and Spanish

Next, the versions offered for Catalan and Spanish in the NRC emotion lexicon were used to find the words proposed to analyse these same emotions in the Valencian context. These conversions were revised and corrected when absolutely necessary, although the idea was to keep them as close to the NRC emotion lexicon proposal as possible.

Amendments were for instance introduced for the case for *dislike*, which appeared in NRC as *no m'agrada* (first person singular), in Catalan, and *desagradar* was used instead, or *courage*, for which the proposal was *valentia*, but the most common *valor* was chosen for the matching in the subcorpus, or, finally, the case of *kindness*, which in the lexicon was transformed into *bondat* in Catalan but into *amabilidad* in Spanish. The two options (*bondad*, *amabilitat*) were searched in the Valencian subcorpus. Some words, like *contentment*, did not have a corresponding term in Spanish or Catalan. An additional problem was *embarrassment/shame*, which were both translated as *vergonya*. Here is the final list of adapted words used for the analyses.

<i>English (en)</i>	<i>Catalan (ca)</i>	<i>Spanish (es)</i>	<i>English (en)</i>	<i>Catalan (ca)</i>	<i>Spanish (es)</i>
acceptance	acceptació	aceptación	generosity	generositat	generosidad
admiration	admiració	admiración	greed	avidesa	codicia
affection	afecte	afecto	grief	pena	dolor
aggravation	agreujament	agravación	guilt	culpa	culpa
anger	ràbia	enfado	happiness	felicitat	felicidad
anguish	angoixa	angustia	hate	odi	odio
anxiety	ansietat	ansiedad	hatred	odi	odio
attraction	atracció	atracción	hope	esperança	esperanza
boredom	avorriment	aburrimiento	horror	horror	horror
caution	precaució	precaución	hostility	hostilitat	hostilidad
certainty	certesa	certeza	impatience	impaciència	impaciencia
compassion	compassió	compasión	jealousy	gelosia	celos
confidence	confiança	confianza	joy	alegria	alegría
confusion	confusió	Confusión	kindness	bondat/amabilitat	amabilidad/bondad
contentment	--	--	loneliness	solitud	soledad
courage	valor	valor	longing	anhel	anhelo
curiosity	curiositat	curiosidad	love	amor	amor
defeat	derrota	derrota	lust	luxúria	lujuria
defiance	desafiament	desafío	malice	malícia	malicia
delight	delícia	deleite	misery	misèria	miseria
dependence	dependència	dependencia	optimism	optimisme	optimismo
depression	depressió	depresión	panic	pànic	pánico
desire	--	--	patience	paciència	paciencia
desirable	desitjable	deseable	pessimism	pessimisme	pesimismo
disappointment	decepció	decepción	pity	llàstima	lástima
dislike	desagradable	disgusto	sadness	tristeza	tristeza
dismay	consternació	consternación	satisfaction	satisfacció	satisfacción
distress	angoixa	angustia	satisfied	satisfet	satisfecho
embarrassment	vergonya	vergüenza	scorn	menyspreu	desdén
enthusiasm	entusiasme	entusiasmo	shame	vergonya	vergüenza
envy	--	--	sorrow	pena	dolor
envious	enveja	envidioso	sympathy	simpatia	simpatía
excitement	emoció	emoción	terror	terror	terror
fear	por	miedo	unhappiness	infelicitat	infelicidad
frustration	frustració	frustración	wonder	preguntar-se	preguntarse
fury	fúria	furia	wonderful	meravellós	maravilloso
			wrath	ira	ira

Table 3. NRC words adapted to Catalan and Spanish.

When planning the analysis, there existed the option to complete two separate studies, one for discourses in Catalan, and another for addresses in Spanish. However, after scrutiny, it was seen that there exist very few interventions in Catalan in the Valencian subcorpus; only those of the president of the camera and the vice-president of the Government, which are usually mere introductions and conclusions to other speeches, those by politicians of the group *Compromís*, and occasionally, members of the socialist party.

Therefore, as the interest of the present research is to compare the use of emotion words in two different contexts (Scottish (original lexicon) and Valencian (NRC-translated lexicon)), and not to see the differences in the use of the words in Catalan and Spanish (which are both conversions of the same lexicon, if we recall), the results for both languages were grouped together. For simplicity reasons we will only include the words in Catalan (see table 3 for the exact word in each language). Here, the ratio was of 1,634 emotion words in the entire 865,118-word Valencian subcorpus, that is to say, 0.001% of tokens in total. As in the previous subsection, table 4 shows the frequencies obtained in this analysis.

<i>High frequency words</i>		<i>Medium frequency words</i>		<i>Low frequency words</i>		<i>One or none occurrences</i>	
culpa	147	agreuament	12	admiració	5	avorriment	1
vergonya	131	horror	11	depressió	5	curiositat	1
valentia	127	alegria	11	frustració	5	simpatia	1
por	104	tristesia	11	solitud	5	compassió	0
dependència	92	generositat	10	optimisme	5	delícia	0
pena	85	preguntar-se	10	ràbia	4	consternació	0
odi	75	desafiament	9	angoixa	4	menyspreu	0
confiança	58	satisfacció	9	emoció	4	avidesa	0
esperança	48	desitjable	8	fúria	4	hostilitat	0
acceptació	31	desagradar	8	pessimisme	4	impaciència	0
amor	31	angoixa	8	enveja	4	gelosia	0
misèria	23	paciència	8	ansietat	3		
llàstima	18	satisfacció	8	pànic	3	luxúria	0
confusió	16	decepció	7	ira	3	malícia	0
derrota	16	felicitat	7	precaució	2	terror	0
certesa	14	afecte	6	entusiasme	2	atracció	0
meravellós	13			bondat	2		
				anhel	2		

Table 4. Lemma occurrences in the Valencian subcorpus

### 3.2.2. Qualitative Analyses

In order to complete this numerical data, a second set of analyses was carried out, so that the specific contexts of apparition of emotion words were identified and the subsequent emotions could be classified as positive or negative feelings, again following the classification provided by the NRC lexicon for the English language.

#### 3.2.2.1 Positive and negative poles in English

For this analysis, as the subcorpora cannot be compared in the number of words, or in the type-token ratio, we have chosen the 10 most frequently used words in the Scottish subcorpus, as the original lexicon was gathered in English. The NRC pack (Mohammad and Turney) also includes the NRC Word-Emotion Association Lexicon, which offers as additional information to the emotion words analysed, their association with eight emotions (anger, fear, anticipation, trust, surprise, sadness, joy, and disgust) and two sentiments (negative and positive). It claims to be available in 40 different languages, and has at present 14,182 unigrams, and about 25,000 word-senses. The association scores are binary (associated – represented as 1, not associated – represented as 0). From the associations proposed in NRC for English, Table 5 has been elaborated:

	<i>Emotions</i>							<i>Sentiments</i>		
	<b>Fear</b>	<b>Sadness</b>	<b>Anger</b>	<b>Surprise</b>	<b>Trust</b>	<b>Disgust</b>	<b>Joy</b>	<b>Anticipation</b>	<b>Negative</b>	<b>Positive</b>
<i>hope</i>	0	0	0	1	1	0	1	1	0	1
<i>affection</i>	0	0	0	0	1	0	1	0	0	1
<i>acceptance</i>	0	0	0	0	0	0	0	0	0	1
<i>hate</i>	1	1	1	0	0	1	0	0	1	0
<i>confidence</i>	1	0	0	0	1	0	1	0	0	1
<i>happiness</i>	0	0	0	0	0	0	1	1	0	1
<i>love</i>	0	0	0	0	0	0	1	0	0	1
<i>patience</i>	0	0	0	0	1	0	0	1	0	1
<i>certainty</i>	0	0	0	0	0	0	0	0	0	1
<i>Sadness</i>	0	1	0	0	1	0	0	0	1	0

Table 5. Emotions and sentiments in the Scottish subcorpus.

This would mean, for instance, that the word *acceptance* can express only a *positive* sentiment, without specification, but that the word *hate* can express *fear*, *sadness*, *anger*, and *disgust*, and is related to a *negative* sentiment, or that the emotion *fear* can be expressed by the words *hate*, *confidence* or *hatred*.

### 3.2.2.2 Positive and negative poles in Catalan and Spanish

Despite its claim to be applicable to 40 languages, the NRC association lexicon is only presented for the English language. To see whether the words and their correspondences proposed, are also coincidental in terms of polarity and sentiment, poles of the words under scrutiny have been considered both in Catalan and in Spanish in the Valencian subcorpus. These ten words have the following occurrences: *esperança*, 48; *afecte* 6; *acceptació* 31; *odi* 75; *confiança* 58; *felicitat* 7; *amor*, 31; *paciència*, 8; *certesa*, 0; *pena*, 85. Following the NCR lexicon, those emotions were then grouped as expressing negative or positive sentiments (poles of emotion). The study here consisted of a thorough examination of their contexts of occurrence in the subcorpus, both in Spanish and in Catalan, in order to analyse emotions and sentiments associated to the words (in either or both languages). Table 6 shows the results for these words in the corpus.

<i>occ</i>	<i>Emotions</i>							<i>Sentiments</i>		
	<b>Fear</b>	<b>Sadness</b>	<b>Anger</b>	<b>Surprise</b>	<b>Trust</b>	<b>Disgust</b>	<b>Joy</b>	<b>Anticipation</b>	<b>Negative</b>	<b>Positive</b>
<i>esperança</i>	48	0	0	0	1	1	0	1	1	1
<i>afecte</i>	6	0	0	1	0	1	0	1	0	1
<i>acceptació</i>	31	0	0	0	1	0	1	0	1	1
<i>odi</i>	75	1	1	1	0	0	1	0	1	0
<i>confiança</i>	58	1	0	0	0	1	0	1	0	1
<i>felicitat</i>	7	0	0	1	0	1	0	1	0	1
<i>amor</i>	31	0	0	0	0	0	1	0	1	1
<i>paciència</i>	8	0	0	1	0	1	0	0	1	1
<i>certesa</i>	0									
<i>pena</i>	85	0	1	1	0	1	0	0	0	1

Table 6. Emotions and sentiments in the Valencian subcorpus.

The cases in which there exist discrepancies with the English equivalent emotion words, appear in coloured cells in the table. Illustrative occurrences have been chosen from the Valencian subcorpus to exemplify these associations of the words linked to the emotions and sentiments proposed, particularly those which differ from the ones accepted for the English language, which appear in grey in Table 6. Examples 1-10 can be found below.

- Example 1. (...) lo hizo siempre con una mirada compasiva hacia la gente y, en múltiples ocasiones, no exenta de ironía y **esperanza** porque, al final, su obra no deja de ser un fiel reflejo de esa España triste y gris, esa España que se forjó durante la dictadura franquista.
- Example 2. L'**acceptació** de les demandes que aquest informe porta incorporades ens allunyen, clarament, de la mateixa intenció amb la qual van ser adoptats els acords.
- Example 3. Y mire, yo sabe que en trato personal le tengo **afecto**. Pero en el tema político, en el ámbito político le tengo que pedir su dimisión, señora Oltra.
- Example 4. Hem d'estar a l'altura del nostre país i de la seua gent. I el govern del Botànic comptarà en eixa tasca amb tota la nostra **confiança** i amb tot el nostre suport. Moltíssimes gràcies.
- Example 5. Amb el seu vot favorable, la Comunitat Valenciana donarà un pas més cap a la justícia social i cap a la **felicitat** col·lectiva.
- Example 6. I, bé, com vosté està obsessionat en eixe **amor** per lo mesetari
- Example 7. Mire jo, senyora diputada, tinc molta  **paciència** i li conteste a vosté les xifres concretes per escrit,
- Example 8. Faig extensius també els agraïments sobretot al lletrat de la comissió, (...), per la **paciència** i per intentar configurar eixe puzzle que moltes voltes ha sigut molt difícil
- Example 9. Neguen l'Holocaust, sis milions de persones assassinades; neguen la violència masclista, huit dones mortes en un mes; neguen el canvi climàtic, quilòmetres de platges arrasades; però, en canvi, fomenten **l'odi** més inhumà contra les criatures que fugen de la guerra, de la fam, de les violacions i de l'horror.
- Example 10. M'agradaria dir que hui he sentit vergonya, **pena**, dolor i estupor per algunes intervencions. Senyories, és indecent, immoral i inhumà perseguir els més febles, com fa l'extrema dreta, no es pot permetre

#### 4. Results

The surveys described above led to the results explained in this section, explained to account for the aims defined at the outset of the study, which have been covered in the present research, and then individualised for each one of the aspects explored.

First of all, and concerning the number of emotion words used in each corpus, it can be clearly seen that the number of occurrences in the Scottish subcorpus is much greater than the number of occurrences in the Valencian subcorpus. In particular, whereas emotion words in the first represent 0.004% of all the words used in the subcorpus, the number of emotion expressions in the second subcorpus only constitute 0.001% of all the words used. That is to say, the fraction of emotion terms in the Valencian subcorpus is four times smaller than that in the Scottish subcorpus. This could imply that expressions in the second corpus are less emotionally explicit – that Valencian politicians are not as expressive or vehement when delivering their speeches as Scottish. Nonetheless, the most likely explanation is that there are other basic words Valencian speakers use to talk about emotion, apart from those analysed. These would be words which do not appear in the list of basic words used in English to express emotion, then converted into Catalan and Spanish, proposed by the NRC lexicon, but synonyms, or singular expressions, lexicalised expressions, or implicatures. Undeniably, maybe it is too simplistic a view to equal one word acknowledged as a common token to express emotion in English with one single word in another language, as nuances or hues can be lost in that translation.

Secondly, if we take an in-depth look at word frequencies, it can be seen that emotion word rates are pretty high, implying vehemence in the debates. In the Scottish subcorpus, the first five

expressions identified have an enormous number of occurrences, which account for almost half of the entire corpus. These are *hope* (almost for one fifth of the entire corpus), *affection*, *acceptance*, *hate* and *confidence*, whereas the Valencian counterparts for the highest frequencies are *culpa*, *vergonya*, *valentia (valor)*, *por* and *dependència*. There is not one single coincidence in the choice of words or the choice of emotions amongst them. Words which have high frequencies in the Scottish subcorpus have medium to low frequencies in the Valencian, and the other way around.

Thirdly, examining the use of positive or negative words in the lists obtained, it can be seen that, whereas the choice of words in the Scottish subcorpus clearly points to positive emotions (*hope*, *affection*), the choice of words in the Valencian subcorpus is mostly negative (*culpa*, *vergonya*). This can be due to a different political momentum, where there exists greater confrontation and ideological disparity in the Valencian Parliament than among Scottish politicians. Alternatively, this could imply that the choice of words in the proposed translations are more accurate to explain negative emotions than those for positive emotions, that is to say, that negative basic emotions are more easily identified with similar words in the different languages.

Finally, if we consider the identification of words with their corresponding emotions and sentiments, shown in tables 5 and 6, by emulating the NRC proposal for English words and applying the analysis to the expressions found in the Valencian subcorpus, it can be seen that, even in the cases where the words are coincidental, the nuances (emotions and sentiments) are not necessarily so, since, for instance, *acceptació* appears only as a positive sentiment in English, but it can also be used for negative sentiments in the Valencian subcorpus. Also, examples such as *felicitat* are described, found to express anger or trust, which does not occur in the Scottish equivalent.

## **5. Discussion and conclusions**

In this paper we have revealed the results obtained from analysing the way emotion is communicated in political discourse by comparing two different contexts, the Scottish and Valencian Parliaments, and by using as tokens words in English and their proposed matches into Valencian and Spanish. Both initial working hypotheses seem to be proven correct, as first, the use of emotion words differs considerably depending on the language used and the context of use, and second, that even when words are direct translations, the assumption that correspondences are exact is too optimistic, as they are culturally-dependant. Moreover, terms do not necessarily identify the same sentiments, nor have the same implications, in their frameworks of use. However, it must be highlighted that there seem to be coincidences mainly in the choice of negative emotion words and emotions. An explanation for this could be that these are more bluntly

communicated, or more often expressed the same way, without need for synonyms, which simplifies their transference to other languages.

Furthermore, it seems that there is quite a degree of vehemence in parliamentary debate, if we look at the frequency of emotion words that appear in the debates, which might reflect the over-representation or over-dramatization of debates due to broadcasting and public display by members of both parliaments. Interestingly, of the words analysed, the greatest frequencies correspond to negative words in the Valencian subcorpus. Also, the results for equivalents of high frequency words in English in the Valencian subcorpus show more negative polarisation in the second than in the Scottish subcorpus.

Also, that the existing lexicons for computer-aided research are not efficient for languages other than English, or at least, that Mohammad's statement about the NRC lexicon that "[d]espite some cultural differences, it has been shown that a majority of affective norms are stable across languages", and, therefore, that with a quick Google translation of terms you can provide equivalent tools for "more than one hundred" languages, is not precise. Indeed, it has been seen that matching terms in several languages are not always equivalent, nor are the emotion words analysed useful to identify matching emotions. Besides, the polarities and reference sentiments also differ from the source language. On top of that, there are no reliable software tools able to work with concordances, frequencies, or part of speech identification in languages other than English. This must be born in mind when thinking about the practical applications of such type of analyses.

Finally, on the subject of the semantic universals supported by ethnopragmatic views, it seems that, although there appear to be coincidences in most of the emotions spotted, as well as in most of the sentiments associated to emotion words, when these are directly translated to other languages and contexts, they do not always necessarily reflect emotions or sentiments – polarities, concurrent with the English primary word used. Supplementary, it seems apparent that more in-depth analyses related to emotion across languages need to be completed, and that specific tools able to account for the specificities of each language need to be developed in order to obtain totally reliable results and successful applications.



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