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Advertising directed to bilinguals: do both languages produce the same response? The case of spanish and basque in basque society

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Abstract

Introduction. The objective of this study is to explore the effectiveness of audiovisual advertising in basque population based on if the language used is the minority language (Basque) or the dominant one (Spanish). Previous research suggests two possible scenarios. In a first scenario, local language (Basque) has a greater capacity to create emotional responses because of closeness and fondness. In the second one, the dominant language generates a greater emotional response because of its predominance. **Methodology.** In order to implement this research, explicit (questionnaires with standard pretest metrics) and implicit (psychophysiological responses) techniques have been employed with an exploratory design featuring two non-randomized experimental groups (n=22 and n=23) in which each group is exposed to ads in one of the languages. **Findings and conclusions.** The results suggest that, if receptors have a minimum linguistic competence in both languages, there is no statistically significant difference between the effectiveness of the ad in one language or another,

neither in implicit measures nor in explicit ones. These results need to be contextualized as exploratory because of the reduced sample and the specific socio-demographic segment used (students).

Keywords
Television advertising; Reception; Bilinguism; Students; Quantitative techniques; Neuromarketing.

Contents

Translation by Jennifer Lukac

1. Introduction and state of the question

The Basque Country (officially known as the Basque Autonomous Community) is one of the seventeen autonomous communities that make up Spain. One of the various markers of Basque identity is an autochthonous language referred to as Basque in English. According to the Fifth Sociolinguistic Map released by the Basque government in 2014, 55.7% of the community's population understands Basque. Spanish, on the other hand, is understood by almost 100% and spoken at home by 77.1%. Furthermore, far more cultural goods and services (mass media content, literature, movies, video games, etc.) are available in Spanish than in Basque.

If we accept the postulation put forth by Mike Cormack and Niamh Hourigan in *Minority Language Media* that minority languages are those "dominated politically and economically by numerically larger communities", Basque qualifies as a minority language. It is estimated that there are ninety linguistic minority communities in Europe alone, ten of which have access to more than 1,000 annual hours of television programming in their native tongue. Basque-, Luxembourgish-, Gaelic-, Welsh- and Catalan-speaking communities fall into this last category (Amezaga-Albizu 2012).

The picture that emerges from studies conducted on multilingualism and emotional response is complex and dynamic. However, all suggest that the language chosen by bi- or multi-linguals to communicate and process emotions is closely related to their prior personal experiences in the languages they speak (Dewaele 2013). Unresolved aspects of the emotional dimensions of bi- and multi-lingualism have been explored from a number of angles (Pavlenko 2007). Many experts who have examined language acquisition (Harris 2006) argue that the context in which languages are learned greatly determines their emotivity and that if both of the languages a bilingual speaks are acquired at an early age their affective charges are quite similar. Dewaele (2004, 2013) has observed that languages learned in structured settings appear to stimulate lower levels of emotional response than those acquired in less formal circumstances.

Advertisers are naturally interested in knowing whether minority languages strike stronger emotional chords with bilingual audiences than majority languages. Although a number of studies have been conducted on the comparative affective resonance of dual languages, few have explored this issue from the perspective of advertising. It seems clear that the use of minority languages in advertising can elicit both positive and negative reactions (Koslow 1994). Many companies make symbolic if judicious use

of minority languages in external communications (Kelly-Holmes 2007) and multinational firms have successfully used them to enhance local perception of their brands (Krishna 2008). A study conducted by Luna, Rugberg and Peracchio (2008) demonstrated the importance of language in advertising targeting bilingual audiences.

One study on audience response indicates that advertising in autochthonous languages tends to stick longer in the minds of targeted consumers (Luna 2001). However, there is also empirical evidence that advertisements seeking to play on bilingual code-switching habits are markedly more successful when the shift is from a minority to a majority language (Luna 2005).

Other authors have reported that advertising in native or first languages conveying positive emotions elicit higher levels of positive audience reaction (Jimenez 2010) and that, generally speaking, the more emotional the tenor of an ad in a first language is, the more strongly native speakers respond to it (Puntoni 2009). The latter nevertheless reports that the bilingual subjects of a scientific trial he conducted considered words more frequently used in or more strongly associated with their second language to have greater emotional force than equivalent words in their first language. This observation would appear to confirm the findings of a study conducted by Marian and Kaushanskaya (2004), which suggest bilinguals' memories of past events have a greater emotional intensity when recall takes place in the language in which they occurred. While Dewaele (2004) observes that bilinguals tend to perceive swear words in the vocabularies of their first languages as being more emotionally charged than those in the vocabularies of their second. He also notes that the degree to which they do is less affected by demographic factors than other variables linked to their acquisition of and personal relationship to that language over time (how and when they learned it, that language's general level of activation, and how frequently they use it).

In terms of social cognition, the authors of another study indicating that advertising in mother tongues targeting bilingual audiences tends to trigger thoughts about receptors' families, friends, home life and countries of origin hypothesised that the use of native languages may well cue the formation of positive associations with products featured in commercial messages (Noriega 2008). Jaganathan (2013) arrived at the similar conclusion that messages delivered in a native language have a stronger emotional impact.

As Basque is an autochthonous, government-supported minority language spoken on a daily basis not only by people who learned it as a first language at home but also by others who acquired it in more formal settings, the question of whether one is a "native" speaker is of little relevance to advertisers. They are more interested in knowing which of the two languages their target audiences speak and understand packs a stronger emotional punch. This study has therefore focused on detecting differences in consumer response to advertising messages delivered in Basque and Spanish. Psychophysiological testing was used to gain a better understanding of the nuances of bilingual response to advertising in both languages. This was by no means a novel approach. Since William James hypothesied on the relationship between physical sensation and emotion in the nineteenth century (James, 1884) various types of physiological reactions have been measured to gauge the nature and strength of emotional response. The most frequently examined are galvanic skin response (GSR), cardiovascular activity (CVA), respiratory activity (RA) and brain activity, the last of which is tracked by means of electroencephalogram (EEG) tests and functional magnetic resonance imaging (fMRI).

Given its emphasis on continuous measurement, Russell's continuous model of affect is particularly useful in the computational analysis of emotions (Russell 1980). Russell asserted that emotion is best

represented in terms of two bipolar dimensions: valence or hedonic tone (positivity and negativity) and arousal or activation (energy level). Valence covers the spectrum of human emotions from pleasure and acceptance to displeasure and rejection, whereas arousal refers to the intensity of emotions experienced on a scale ranging from calmness to excitation. Scholars have generated a substantial body of literature on the evaluation of psychophysiological responses using Russell's continuous model (reviews in Friedman 2010; Kreibig 2010; Harmon-Jones 2010).

This study has used GSR and CVA readings to evaluate emotional response. GSR has two dimensions: a tonic, baseline skin conductance level referred to as SCL and a phasic skin conductance level measured in terms of peaks in conductance triggered by specific stimuli that are referred to as skin conductivity responses (SCRs) (Boucsein 2012). Russell's continuous model associates spikes in SCL or SCR with heightened levels of emotional intensity. CVA can be broken down into heart rate (HR) and heart rate variability (HRV), both of which can be used to evaluate emotional response. For example, heart rate accelerates and HRV decelerates during prolonged states of arousal, and HR also dips momentarily following a strong stimulus.

As electro-dermal response ranges vary from person to person and from one moment to the next (Friedman 2010), researchers studying affective processes are increasingly using computational models to deal with within- and between-subject variations (Valenza 2014; Picard 2001; Kim 2004). Computational modelling entails calibrating individual baseline levels of emotional arousal for every member of a test cohort that are subsequently used to evaluate each one's emotions on the basis of his or her physiological responses to specific stimuli. By affording researchers a means of mapping out the relationships between the physiological responses and emotions of every participant in a study, computational modelling techniques significantly reduce the impact of within- and between-subject variability that inevitably comes into play when using physiological responses to evaluate affective states.

Over the past few years, advertising professionals and scholars alike have become increasingly enthusiastic about the use of physiological response testing in market research (Ariely 2010). Physiological response measurement techniques can be used to generate implicit (subliminal) information about consumer preferences that complements explicit (rational and conscious) information obtainable by means of traditional methods such as surveys and interviews. Although many different metrics are used to evaluate the effectiveness of advertisements, most of them fit into the three basic categories of memory, affect and persuasion (Johar 2006; Belanche 2014). Of the various facets of affect that have been measured, the likeability of an advert is considered to be the one most closely associated with consumer decisions to choose one brand rather than another (Shimp 1981; Biel 1990; Haley 2000). The metrics of explicit measurement used in this study have been based on the three basic categories noted above.

Various researchers have used implicit methods to measure the effects of television advertising (Hazlett 1999; Ohme 2010; Bertín 2014). Of particular interest in the geographic context of this research are two studies recently published in Spanish-language scientific journals (Tapia 2016a, 2016b) for which GSR measurements were used to gauge the emotional responses of test groups asked to view two types of audiovisual content: in the first case, an episode of a television series and in the second, a set of entertaining advertising spots. The objectives pursued and methods used to decode emotions in both of these studies nonetheless differed substantially from those of the research reported here, which entailed not only measuring GSR but also tracking individual response patterns by means

of computational techniques to reduce the within- and between-subject variability inherent to all psychophysiological studies.

The principal objective of this study has been to do an exploratory comparison of the relative effect of television commercials broadcast in the Basque Country's two co-official languages: Basque (the minority language) and Spanish (the dominant language). Three more concrete objectives arose from this general one:

The first objective was to know if there are differences in emotional response to advertising depending on the language that is used. The second one was to assess if there are differences due to the language in the conscious evaluation that the viewers made about the adverts. Finally, the last one is to compare the result of the two previous methodologies.

To this end, research has been structured to include the use of both explicit and implicit research methods, which were respectively the distribution of a questionnaire containing standard advertising copytest questions (for conscious evaluation) and psychophysiological testing (for emotional response). Study participants were divided into two non-random groups, each of which was asked to view a fixed set of television advertising spots in one of the two languages addressed in the study.

2. Materials and methods

2.1. Population and sample

The sample was divided into two homogeneous groups of comparable intelligence and linguistic ability (n=22 in group 1 and n= 23 in group 2), so neither of these variables can be construed as having a bearing on the results of the study. Both non-randomised test groups used in this exploratory study were comprised of undergraduate students in the University of the Basque Country's Faculty of Social and Communication Sciences. All students participated on a voluntary basis and received neither monetary compensation nor credits for their involvement in the project.

Regarding linguistic ability, tests developed by a government-mandated language school were used to ensure that every student in the sample was Basque-Spanish bilingual. Although all demonstrated a similar command of Spanish (sd<1 for a questionnaire containing 20 questions), the variance in their levels of competence in Basque was somewhat more pronounced (sd>1.5). Although all candidates were enrolled in university courses taught in Basque, only those who had achieved a score of at least 12/20 on the Basque test were considered for the sample. The application of this exclusion criterion supposed the rejection of 20% of the initial pool of candidates. In any case, the average result was higher in Spanish than in Basque, even if the test corresponded to the same level. This could be the result of the test being easier in Spanish but probably is more the reflection of the dominance of the Spanish language in the region.

Regarding intelligence, Weschler Adult Intelligence Scale tests were used to determine that all participants were equally capable of understanding the tasks they would be asked to carry out.
The means and standard deviations were controlled to ensure homogeneity in both variables: Basque language competence (m1=14.05; sd1=1.33; m2=14.13; sd2=1,21; and p=0.85 for a two-tailed equal variance t-test) and intelligence (m1=5,52; sd1=0,80; m2=5,35; s2=0,68; and p=0,51 for a two-tailed equal variance t-test).

2.2. Research techniques
2.2.1 Explicit techniques

Once each viewing session had ended, participants were asked to fill out a Google Forms questionnaire that addressed the previously mentioned constructs of memory, affect and persuasion routinely applied in advertising pre-testing (Venkatraman 2015; Biel 1990; Du Plessis 1994; Haley 2000). Spontaneous recall and aided recall questions were used to test respondents' memory of the content they had previously viewed. Affect was tested by means of a question that probed their perception of a particular advert in terms of likeability. The question related to persuasion queried respondents' intention to purchase or recommend a product or service featured in an advertisement they had viewed. Given that the 24–72 hour forgetting period stipulated by Young (2004) for memory measurement was not observed in the case of this study, results corresponding to spontaneous and aided recall questions must be interpreted as indications of attention span rather than memory. In order to monitor the effect that it might have on answers provided, respondents were also asked if they had seen the advertising spot prior to participating in the study.

Information gathered by means of this survey was entered into a table and coded according to the following variables:

1. Seen: binary variable (0 not previously seen, 1 previously seen) that indicated whether participants had stated they had seen the spot prior to the study;
2. Attention (spontaneous recall): binary variable (0 could not recall, 1 was able to recall) that indicated whether participants could remember any identifying aspects of a particular advert (brand, product, personalities featured, etc.) when asked which spots they recalled having seen during the viewing session;
3. Memory (aided recall): binary variable (0 could not recall, 1 was able to recall) that indicated whether participants could identify adverts seen from a list;
4. Attitude towards an advert (liking): binary variable for which 1 indicated that a participant had marked either of the two most positive responses on a five-point liking scale that ranged from "didn't like at all" to "liked very much" and 0 indicated that the participant had marked any other possible choice;
5. Intention to purchase: binary variable based on the same five-point scale described for the preceding variable but pertaining to a participant's intention to purchase a product seen in an advertisement during the viewing session (answer options ranged from "will definitely not purchase" to "will definitely purchase");
6. Intention to recommend: binary variable based on the same five-point scale described for the preceding variable but pertaining to the probability that a participant would recommend a product featured in an advertisement seen during the viewing session to others (answer opinions ranged from "very unlikely" to "very likely").

Statistic analysis: Given that the data to be examined was paired (distinct sets of results corresponding to separate Spanish and Basque viewing groups), study participants had been asked to respond to yes/no questions related to six different metrics, and the size of the sample was limited, Fisher exact tests were used to determine what impact, if any, language might have had on metrics measured.

2.2.2. Implicit techniques

Instrumentation: Different types of sensors were used to measure GSR and CVA. The first consisted of a pair of low-voltage electrodes placed on the medial phalanx of the index and middle fingers of each subject's left hand that measured variations in skin resistance. The second was a photoplethysmographic device designed to measure variations in the absorption of infrared light (wavelength of 950 nm) at the point of the proximal phalanx of subjects' left index fingers. The first detected variations in perspiration and the second variations in blood flow. Both were integrated into a single device featuring a three-axis (x, y, z) accelerometer for measuring finger movements in g's that was used to detect and discard segments of physiological activity contaminated by artefacts. This testing equipment, which was supplied by Bitbrain technologies SL, is designed to communicate with a nearby computer by means of a wireless connection (2.4 GHz WLAN).

Software: Software developed by the same firm was used to design the protocols for the study, record physiological responses and ensure that the intervals at which sensor devices recorded this activity were perfectly synchronised with the advertising spots shown to study participants.
Signal analysis: Signals were adjusted to track the following three facets of participants' emotional states while viewing content:

1. Skin Conductivity Level (SCL): it is the low frequency, tonic baseline response of the electrodermal activity. It is linked to attention,engaging or stressing processes (Boucsein 2012).

2. Skin Conductivity Responses (SCR): it is also referred to as the phasic part of the electrodermal activity. It is a quick and momentaryresponse elicited by an external event. It is related with the emotional arousal response provoked by external stimuli (Boucsein 2012).

3. Heart Rate Variability (HRV): it is the variation in the time interval between heartbeats. It has been associated with emotional activation or arousal (Kreibig 2010).

The GSR signal was low-pass filtered using a fourth-order Butterworth filter with a cut-off frequency of 1 Hz and the electrodermal skin signal divided into two components (tonic or SCL and phasic or SCR) by means of a nonnegative deconvolution technique developed by Benedek and Kaernbach (2010). As skin resistnce levels fluctuate from person to person, the value of the tonic response of every subject at the beginning of each spot was subtracted from those subsequently registered during the duration of that particular video. The CVA signal was band-pass filtered between 0.5 and 4 Hz using a fourth-order Butterworth filter. Once this was accomplished, a "sliding window" peak detection algorithm was used to locate variations in cardiac rhythm (HRV) and identify artefacts in the signal. As cardiac rhythm also varies from person to person, the CVA value for all subjects at the beginning of each spot was likewise subtracted from those subsequently registered during the duration of that video.

In order to compare results from different subjects, results for each metric and each video were calculated by means of a three-step process. In the first one, calibration videos were used to calculate a model for each participant (see section 2.4). The mean of the calibration videos that elicited the highest and the lowest results for each metric where used to establish the -100% and 100% values. In the second step, the model for each subject and metric was applied to measurements for each

metricspot and participant, redefining the metric as a percentage according to calibration model. In the final step individual results (in percentage of calibration) were averaged for each spot to obtain results for the total sample.

Statistical analysis: Three mixed anova (SCL, SCR and HRV) analysis were conducted to determine whether the emotional responses of participants to the advertising spots presented varied in function of the language in which they viewed them and if this difference is also presented in any particular video. The mixed anova is a procedure that allows to accommodate the need to consider two factors where one of them is tested between independent samples and the other is tested within a dependent sample. In our case language factor (with 2 levels corresponding to Basque and Spanish) data were collected from two independent groups of subjects (one of which viewed material in Spanish and the other in Basque) so language constituted the between-group factor; the audiovisual content (with seven levels corresponding to advertising spots T1–T7) was viewed by all subjects so it constituted a within-group factor.

2.3. Test content

Test content comprised 7 television advertising spots: 6 for products and services offered by the food, alcoholic beverage, television broadcasting, telecommunications and banking sectors plus 1 government-sponsored PSA (see Table 1). Three criteria guided the selection of spots to be used for the test. The first was that the overall viewing programme had to represent a spectrum of sectors. Spots chosen also had to have been produced in both Spanish and Basque, and both versions of a spot had to employ equivalent rhetorical devices. The third condition proved to be the most difficult meet, given that the routine practice of producing spots initially in Spanish and dubbing them later in Basque often results in a certain disparity between the rhetorical devices used in the respective versions (Garai-Artetxe 2014).

Table 1: Sector and length of advertisements

Advertisement	**Advertiser**	**Industry**	***Duration***
T1	EiTB	Television	58s
T2	Gure Zura	Government	31s
T3	Caja Laboral	Banking	47s
T4	Euskaltel	Telecommunications	45s
T5	Keller	Alcoholic beverages	1m 4s
T6	Kaiku	Food	21s
T7	Café Fortaleza	Food	20s

2.4. Procedure

Subjects were tested in groups of three in a specially prepared studio. Sensors designed to register physiological responses were affixed to the index and middle fingers of participants' left hands and all were instructed to move this hand as little as possible during the test session. Advertising spots were shown on 60-inch flat screen TVs. Immediately after the viewing session, participants were asked to

fill out questionnaires that required them to evaluate each of the advertisements they had watched according to the metrics previously outlined in section 2.2.1.

Each 25-minute viewing session was divided into three segments devoted consecutively to familiarization, calibration and evaluation (see Figure 1).

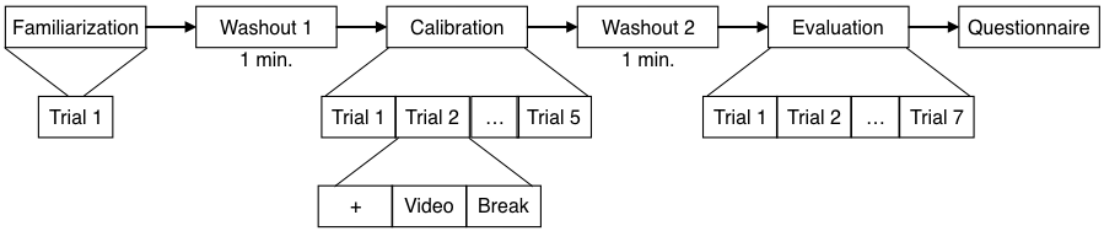


Figure 1: Protocol of 3-step viewing session: familiarization, calibration and evaluation.

The familiarization segment served to accustom participants to the routine they were expected to follow during the actual test and therefore reduce the effect of learning bias and novelty on results. During this part of the experiment, participants were shown a video unrelated to the actual experiment that did not feature a language component.

Calibration entailed establishing baseline measurements of low, neutral, high and peak physiological responses for all participants that could later be compared to their responses to test stimuli. During this segment, participants were asked to watch five calibration videos, none of which made use of Spanish or Basque. All participants watched the same calibration videos in order to create an individual model that is comparable between individuals. This allows to compute the average of the sample, thus avoiding that predominant subjects with higher or lower physiological levels contaminate the outcomes.

The evaluation segment was entirely devoted to obtaining the physiological responses for every participant in the study. The sample was divided into two groups, as stated in population and sample section, both of which were asked to watch a fixed set of 7 advertising spots presented in random order. Group 1 viewed a Spanish version of this content and group 2 viewed a Basque version.

One-minute washout periods were programmed between each segment to allow participants' levels of physiological response to stabilise. During these breaks, they were instructed to close their eyes and relax.

Videos shown during all segments were presented in the same manner. A cross (+) was displayed in the middle of the screen to focus viewers' attention on a common point prior to the screening of every unit of content and the prompt word "relax" appeared on the screen for 30 seconds immediately afterward (break).

3. Analysis and results

3.1. Results for implicit techniques

No differences in emotional response linked to language could be detected in terms of SCL, SCR or HRV levels ($F = 1,895$, $p = 0.178$; $F = 2.532$, $p = 0.120$; $F = 0.042$, $p = 0.839$). This indicates that

language did not affect the measured emotional-physiological variables for the set of videos when considered as a whole.

Whereas SCL and SCR levels did vary from spot to spot irrespective of the language in which they were presented ($F = 4.876$, $p < 0.001$; $F = 5.800$, $p<0.0001$), HRV did not ($F = 1.348$, $p = 0.238$). These results, which indicate that the 7 spots presented triggered varying levels of emotional response regardless of the language in which they were viewed, are consistent with the varied nature of the adverts contained in the sample. Figure 2 provides a breakdown of emotional responses per unit of content viewed. Nevertheless, no differences were detected between the responses recorded for the two separate groups in terms of SCL, SCR or HRV ($F = 1.098$, $p = 0.365$; ; $F = 0.899$, $p=0.497$; $F = 0.706$, $p = 0.645$). This indicates the absence of differences in emotional response attributable exclusively to the languages employed in the test videos viewed by participants.

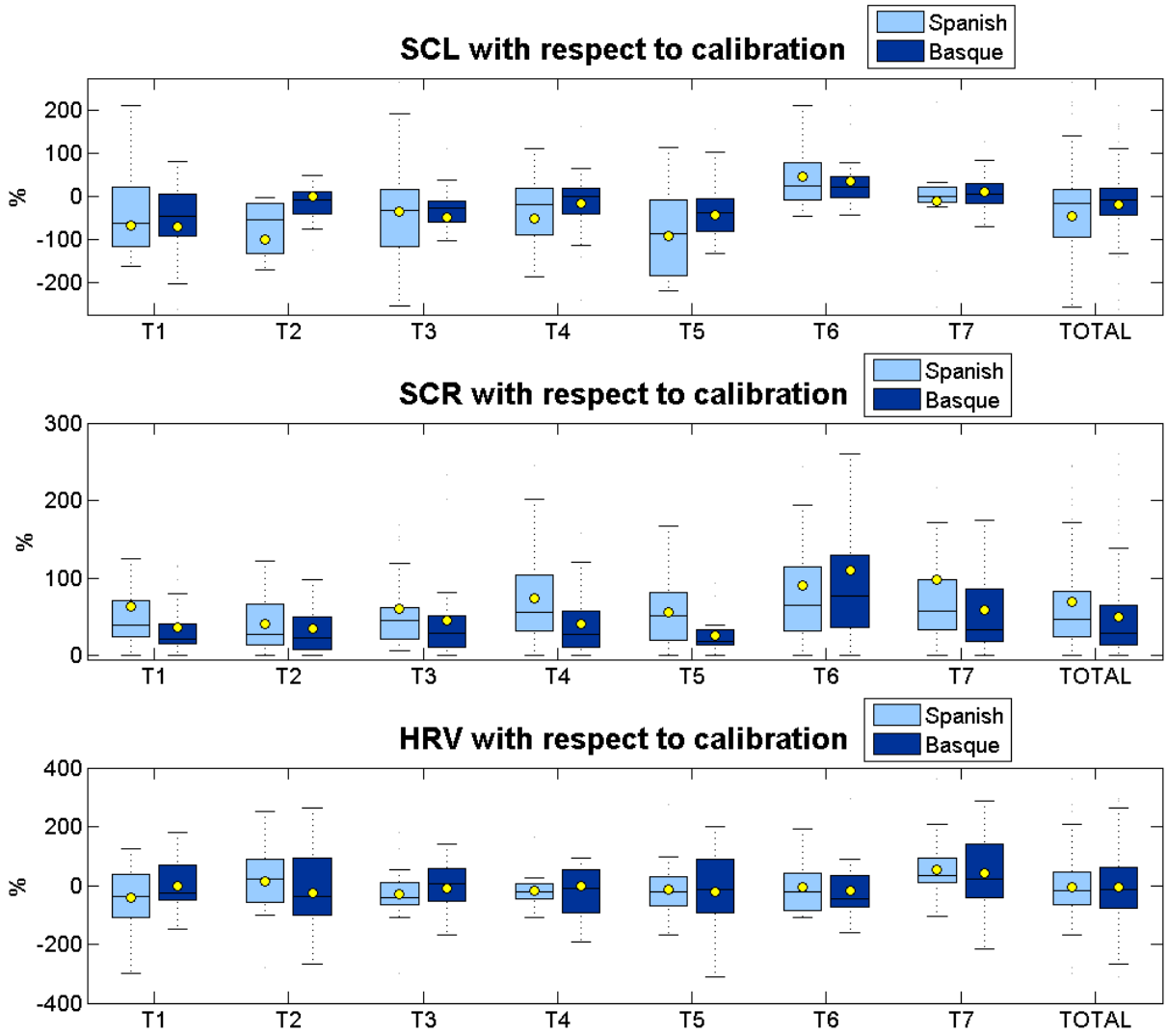


Figure 2: Box plot diagram showing attention, emotional activation and emotional impact levels registered for each advertisement in each language.

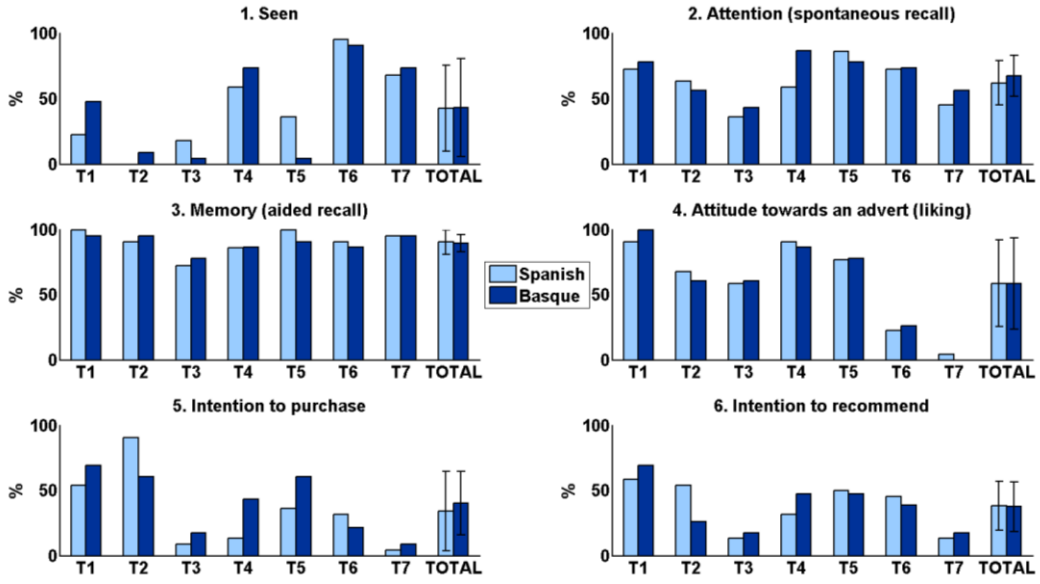
Given that some spots generated higher levels of emotional response irrespective of the language in which they were presented, a post-hoc analysis of the overall results for both test groups was performed. As all participants had viewed the complete set of 7 advertisements, a dependent paired

samples t-test was conducted and results were corrected using the Holm-Bonferroni correction for multiple comparisons with an alpha level of 0.05. Results of this procedure revealed that advertising spot T6 generated a significantly higher level of SCL than T1 ($p<0.00$), T2 ($p<0,01$), T3 ($p<0.01$) and T5 ($p<0.00$) and a significantly higher level of SCR than T1 ($p<0.00$), T2 ($p<0.00$), and T5 ($p<0.00$). The higher response levels for these metrics may be related to the extended use of an advertising jingle in both versions of T6 and the fact that they appeared to be louder than the other spots viewed (a quality achieved by means of a trick of the trade that entails maintaining the sound at the highest possible volume without saturating it).

Although there were no differences attributable to language in the overall results for the 7 spots viewed or results per spot, an additional exploratory post-hoc analysis was carried out to take a closer look at possible trends. This consisted of a less stringent t-test (with no correction) for dependent samples, which revealed a significantly higher SCL level for the Basque version of T2 ($p<0.05$) and a higher level of SCR for the Spanish version of T5 ($p<0.05$). There were no differences in levels of HRV. The variation in results for T2 and T5 must therefore be considered isolated cases. When considered together, the advertising spots in Spanish generated a significantly higher level of SCR ($p<0.05$) than their Basque-language equivalents. As can be seen in Figure 2, spot T6 was the only exception to this trend. Nevertheless, the dominance of Spanish in this category did not extend to the other two metrics (SCL and HRV).

3.2. Results for explicit techniques

Figure 3 provides an overview of the results for explicit metrics. The first observation to be made is that the language in which content had been viewed had no effect on results for the six explicit metrics measured (which were, in the order in which they are illustrated in Figure 3) p=1, p=0.345, p=0.849, p=1, p=0.296, p=1). This is to say that no discernable differences in participant responses attributable to language were detected when the seven spots are viewed as a set.



This may be observed qualitatively in Figure 3, which shows that despite individual variations in the metrics values for each spot, the differences between the results for Spanish and Basque versions become minimal when advertisements are viewed in sets.

Figure 3: Results for the six explicit metrics obtained by means of questionnaires prepared for each advertising spot in both languages (percentage of test population that offered positive answers).

The second notable aspect of the findings was the variation in participant responses to certain spots irrespective of the language they had been presented (the results for which were, in the order in which they are illustrated in Figure 3: 1.) p=0, 2.) p<0.001, 3.) p<0.05, 4.) p=0, 5.) p=0, 6.) p<0.01). The Spanish-language version of advertisement T2 appears to have been considerably more effective than the Basque-language version if measurements for all metrics are averaged (although the Basque version of this spot elicited a higher level of response for the implicit metric of emotional activation). If evaluated from the same perspective, the Basque-language version of spot T3 outperformed its Spanish-language counterpart.

In light of these results, a post-hoc study of every variable was conducted by means of a Fisher exact test using a Holm-Bonferroni correction for multiple comparisons with an alpha level of 0.05. The results can be seen in Figure 4, which provides a breakdown of p-values per grouping of metric and spot. Differences in the values of the majority of variables analysed from one spot to another are consistent with the variety of the spots included in the content sample, the exception being aided recall, which was consistently high for every spot used in the study.

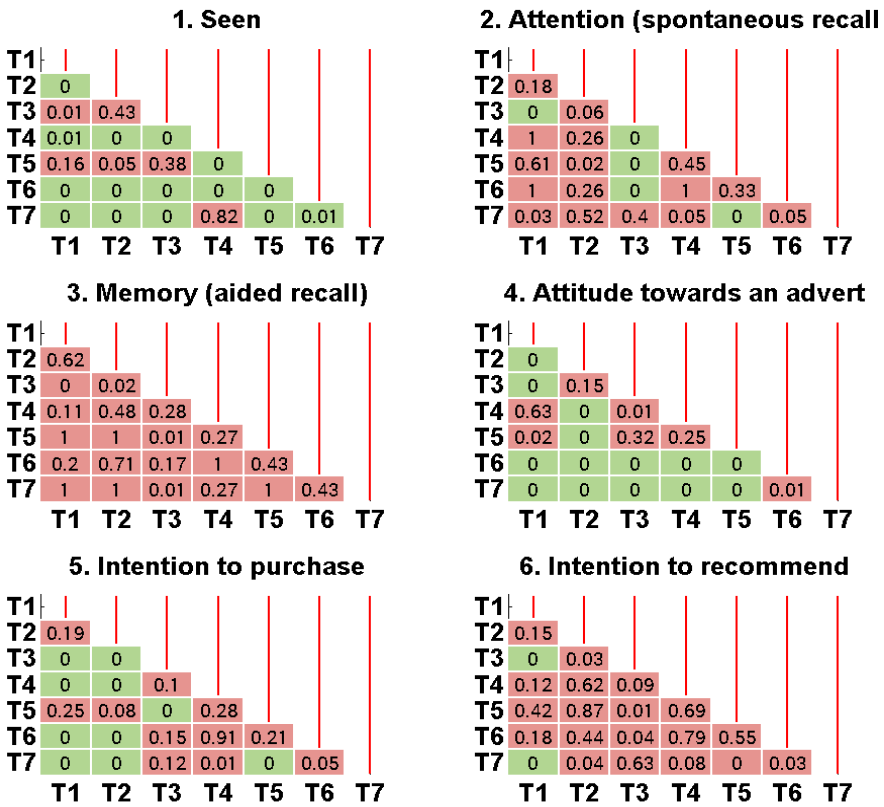


Figure 4: Fisher exact test results: p-values for each of the six variables addressed in the questionnaire for pairs of advertising spots. No distinction was made between language versions for this test. The p-

values of pairs of spots highlighted in green remained significant following Holm-Bonferroni correction.

The third finding of importance, which concerned the effect of language on participant response to each spot, was that no statistical differences were detected for any of the six metrics when data was analysed using a Fisher exact test for multiple comparisons and p-values were adjusted using a Holm-Bonferroni correction with an alpha of 0.05. In other words, when we compare results for all six variables for a given spot in both languages, no significant differences can be discerned. Nevertheless, when criteria were relaxed (no correction) in order to detect divergences between the results for the two language versions viewed on a variable-by-variable basis and identify possible trends in the data, several differences could be observed. For example, the percentage of survey respondents stating they had seen spot T5 prior to participating in the study was significantly higher for the group that had viewed content in Spanish (36%) than the group that had viewed it in Basque 4% ($p<0.01$). Nevertheless, this variance did not suppose significant differences in the data on other metrics for this spot. On the other hand, spontaneous recall for spot T4 was stronger among respondents who had watched the Basque version than among those who had watched the Spanish version (87% compared to 59%, $p<0.05$). Finally, the percentage of respondents expressing an intention to purchase the product featured in spot T2 was higher in the Spanish-language cohort (91%) than the Basque-language cohort (61%) (T2, $p<0.05$), although the reverse occurred in the instance of spot T4, for which only 14% of respondents who had watched the Spanish-language version indicated an intention to purchase compared to 42% of the respondents who had watched the same content in Basque ($p<0.05$). Neither of these isolated variances suggested the existence of a trend. Spontaneous recall and intention to purchase for the Basque version of spot T4 were also slightly stronger, although this difference was not reflected in any of the other metrics for this spot and did not support broader comparisons between data for this particular advertisement and the others used in this study.

3.3. Correlations

Tables 2 and 3 show the correlations between participants' implicit and explicit responses to content samples presented in Spanish and Basque. As explicit data was not normally distributed, a non-parametric method (Spearman's rank correlation coefficient) was used to measure the relationship between these two sets of data. As explained in the methods section of this paper, three of the explicit variables measured ("seen", attention" and "aided recall", indicated respectively in Tables 2 and 3 as "Seen", "Attention" and "Memory") were binary. During this particular phase of analysis, correlations for the others (liking, intention to purchase and intention to recommend) were based on the full 5-point scale on which they had been structured rather than binarised.

Tables 2 and 3 also provides the results for the implicit variables of SCL, SCR and HRVSCR, in addition, was further decomposed into correlations related to the total number of phasic responses ("Nhits"), the number of phasic responses per unit of time ("Nhits per second"), mean value of phasic responses ("Mean hits amplitude"), mean value of phasic responses per unit of time ("Mean hits amplitude per second"), maximum value of phasic activity ("Hits max") and minimum value of phasic activity ("Hits min").

a) Correlations for group viewing Spanish-language advertising spots

Table 2. Implicit – Explicit variables correlations for Spanish-language group

	Seen	Attention	Memory	Liking	Intention to purchase	Intention to recommend
SCL	0,219	-0,037	-0,102	-0,097	-0,213	-0,080
SCR	0,150	-0,031	0,158	-0,007	-0,189	-0,064
Nhits	-0,158	0,268	0,182	**0,427 ***	0,043	-0,080
Nhits per second	-0,012	0,313	0,197	0,068	0,043	-0,156
Mean hits amplitude	0,133	-0,168	0,118	-0,050	-0,155	0,030
Mean hits amplitude per second	0,226	-0,186	0,076	-0,302	-0,170	-0,018
Hits max	0,215	-0,033	0,087	0,093	-0,139	0,044
Hits min	-0,112	-0,143	-0,004	-0,115	-0,055	0,023
HRV	0,024	-0,066	-0,067	-0,086	0,060	0,038

b) Correlations for group viewing Basque-language advertising spots

Table 3. Implicit – Explicit variables correlations for Basque-language group

	Seen	Attention	Memory	Liking	Intention to purchase	Intention to recommend
SCL	**0,322 ***	0,004	0,176	-0,156	-0,193	-0,066
SCR	**0,409 ***	0,031	0,171	-0,112	-0,173	-0,029
Nhits	-0,085	0,136	0,061	**0,406 ***	0,263	0,126
Nhits per second	0,119	0,050	0,007	0,052	0,087	0,030
Mean hits amplitude	0,282	-0,007	0,155	-0,197	-0,202	-0,057
Mean hits amplitude per second	**0,390 ***	-0,095	0,114	**-0,412 ***	**-0,316 ***	-0,119
Hits max	**0,321 ***	-0,041	0,160	-0,045	-0,107	0,021

Hits min	0,045	-0,014	-0,004	-0,197	-0,181	-0,051
HRV	0,153	0,063	0,071	-0,074	-0,101	-0,060

Tables 2,3: Spearman's coefficient for each pair of variables. The coefficients for pairs of variables that were shown to have had statistically significant correlations after the application of the Bonferroni correction are indicated in with a *. Table 2 shows results for the Spanish-language group and Table 3 results for the Basque-language group.

Especially noteworthy are the correlations between responses on the liking scale, the total number of phasic responses recorded (ρ=0,427 for Spanish and ρ=0,406 for Basque) and the mean amplitude of phasic responses per unit of time (ρ=-0,412 for Basque, but not significant for Spanish), which indicate that spots triggering the highest numbers of phasic responses a/o phasic responses of a lesser mean amplitude were subsequently ranked higher on the liking scale by respondents. The correlation between the number of phasic responses an advertisement generated and respondents' positive opinion of the same is interesting. It must be kept in mind that the spectrum of emotional impact measured during this study ranged from negative to positive. The correlation established suggests that emotions registered were, on the whole, positive. This is a logical assumption given that the overwhelming majority of advertising spots are specifically designed to elicit neutral or positive rather than negative responses.

Basque was the only language for which there was a significant correlation between prior exposure to an advertisement and higher levels of SCL (ρ=0,322), SCR (ρ=0,409), mean value of phasic responses per unit of time (ρ=0,39) and maximum value of phasic responses (ρ=0,321). Whereas a familiar stimulus in Basque clearly triggered a strong emotional response, the correlation between familiarity with content in Spanish and the same metrics was substantially weaker and well below a statistically significant level.

It should be stressed that while significant correlations could not established for Spanish, those observed for Basque did suggest a general trend. A closer analysis of the data indicated that a combination of outliers and artefacts might have prevented this trend from being statistically significant.

4. Conclusions and discussion

Although this study must be considered exploratory due to the relatively small size of the sample examined, it nevertheless allows us to draw a tentative conclusion: if viewers have at least a proficient command of two languages (determined in this case with 12/20 or more in the language test of the minority one), advertisements in any of the languages they understandelicit an equivalent response, even if the command of one of the languages is better than the other (that was the case for Spanish, the dominant language, for both groups). Language does not seem to have a big enough effect to be significant in the elicited response. A few previously described, isolated deviations that did not suggest trends aside, the results for both the implicit metrics (SCL, SCR and HRV) and the explicit metrics measured for this study corroborate this conclusion.

This finding differs from those of prior studies cited in the state of the question section of this paper that reported significant differences in the relative effects of given languages in othercontexts

(including also advertising to bilingual's context). We think that sociolinguistic context and competence with language could have had a great deal of importance in the findings of previous studies. Our intention has been to isolate the effect of language only. First, we did two homogeneous groups and show them only advertisements in one language to each group. So no comparison or confrontation between two possible languages appeared in an explicit or implicit way.

Second, a conscientious effort was made to ensure that the sample population used in this study was homogenous in terms of intelligence quotient and linguistic ability (the latter being essential to avoid biases stemming from a lack of competence in one of the two languages involved). The majority of previous studies have used self-reported measures of linguistic competence, while we conducted an actual language test and made two groups of equivalent competence. In fact, some of previous studies have reported the effect of language competence, as explained in the introduction of this article. Additionally, care was also taken to locate pairs of advertising spots in Basque and Spanish that were equally rich in terms of rhetorical resources. As mentioned in the introduction of this paper, this was a challenging task given that most of the television advertising broadcast in the Basque Country is initially produced in Spanish and subsequently translated into Basque, a process that frequently supposes a loss of metaphoric meaning, linguistic expressiveness and continuity between sound and image.

Furthermore, test groups were not formed on the basis of the maternal language of participants (as was the case in some of these previous studies) but rather as two homogeneous bilingual cohorts with equal levels of competence in each of the languages.

In the context of this study, which examined the reactions of homogeneous cohorts to homogeneous sets of advertising spots, neither language employed appeared to have had a discernably greater effect on viewer response. One might have supposed at the outset that as a minority language Basque would have less emotional pull than Spanish, or, to the contrary, that as a marker of regional identity it would have greater emotional appeal. Nevertheless, findings indicate that neither was the case and that both languages triggered equivalent levels of response.

We also have to take into account that a variety of spots (category, duration, expressive style) were used, as differences in the result of the metrics employed suggest. Would be these results different if a more homogeneous sample had been used (i.e., only humorous spots of low implication products)? It remains to be explored whether there is a language effect in more specific types of spots.

As stated previously, the results reported here must be considered exploratory due to the limited size and demographic scope of the student test population examined. Furthermore, as the cohorts tested were chosen strictly on the basis of linguistic competence, the question of whether messages delivered in a maternal rather than an acquired language might elicit higher levels of emotional response remains to be explored.

It seems that the recommendation for advertisers, just from the effects of language point of view, should be to use the dominant language to profit from a wider reach. However, even the effect of communicative pieces is similar, using the regional language is frequently a matter of image, as consistently ignoring the local language could result in a more rational and organised negative reaction that has nothing to do with the effect of the advertisements themselves. Also, from a different perspective, a correctly translated spot in the minority language seems not to be less effective eliciting responses than its dominant language counterpart.

Finally, from the comparison of implicit and explicit measurements of advertising effect, an interesting correlation has arisen between number of phasic hits in SCR and liking (attitude to the advertisement). The correlation has been observed with Spanish and Basque advertisements, so probably it deserves to be explored further. Although theoretically a higher number of SCR hits could be originated by positive or negative emotions, the advertising context probably is focused in generating positive emotions, with failures being the inability to generate a response at all (neutral emotion).

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