Viewers' emotional reactions and popularity of audio-visual products during cross-cultural consumption through Social Media

ABSTRACT

With the emergence of the social media as a web-based sharing platform, cross-cultural media production and consumption is no longer a one-way process from the West (mainly the USA) to other countries. Now the process is multidirectional. Additionally, there is scarcely research about audio visual products originated in east cultural and consumed in western culture countries to draw any firm conclusion about cross cultural audio-visual consumption. In this study we contribute to knowledge describing and understanding the consumption of Korean audio-visual productions by western audiences via social media. We studied the relation between emotion sharing and popularity through the view of the stardom theory. Even though emotional sharing is instrumental in building social-affection that audiences look after when become involved in social media consumption, the relation of high popular series with emotion sharing is mediated by an exponential process fuelled by the series' market size. Additionally, the strength of emotions expressed differs according to language.

Keywords: sentiment analysis, social media, cross-cultural consumptions, emotional sharing

1. INTRODUCTION

Research into the internationalization of media products has typically studied flows from the USA to the rest of the world, conventionally promoted through the traditional mass media (via radio for music, TV, movies, etc.), distributed through controlled channels (retailers for music and DVDs, theatres for movies, etc.), and adapted — dubbed or subtitled —as necessary according to local markets. The audience was passive in terms of consumption choices, as producers and marketers essentially decided what to distribute. However, globalization has changed how media products are commercialized beyond the point of production, and, consequently, has affected the direction of international flows of media products.

However, the dematerialization of cultural productions has revealed itself as a key factor in media globalization. This transformation from tangible to digital products has encouraged the erosion of local and national boundaries that limited consumption, now being possible to access cultural products sourced anywhere in the world, particularly through social media (Boone and Péli, 2016). In our globalized era, social media plays a key role in promoting, distributing, and adapting products to local markets; social media users play an active role in this process, not only as a co-producers who adapt — dub or subtitle — media products for other consumers to enjoy. Consequently, although traditional producers may still control marketing channels, they have little control over the social media, participated in by active consumers.

The role of audiences is at the heart of our understating of new social media consumption. Audiences in social media are active co-producers (Denison, 2011) or prosumers (Toffler, 1989) of media products rather than mere passive consumers. They actively seek, select, and consume products, but also co-produce products by including extra content, primarily in the form of language adaptations (mainly subtitles). The language barriers that traditionally existed are thus removed, enabling media experiences to be shared with others.

In this paper, we examine the active role of western audiences in consuming, promoting, distributing, and co-producing media products from non-western countries, specifically, Korean TV series. We describe how these globally sourced products are consumed via the social media, and interpret what is happening in the minds of individuals during viewing.

2. THEORETICAL FRAMEWORK

2.1 East to West cultural flows

There seems to be no compelling reason to explain why there has been relatively little research on the consumption of audio-visual produced in east cultural countries in western culture (Janssen and Peterson, 2005; Katz-Gerro, 2011; Kuipers and de Kloet, 2009). With the emergence of the social media as a web-based sharing platform, there is overwhelming data challenging the notion that cross-cultural media production and consumption is a one-way process from the West (mainly the USA) to other countries (Achterberg et al., 2011), the process is now multidirectional—in terms of both production and consumption. In this research we study the consumption of Korean cultural products in order to potentially fill a gap in cross-cultural theories regarding the new multidirectional production and consumption of media products (Baek, 2014; Katz-Gerro, 2011).

2.2 Interaction in social media

Researches have shown that social media users not only seek information in the social media but also participate in co-production processes and interact among them by sharing their interest and emotional support to other peers (Tse, 2016; Serrano-Puche, 2015; Boyns and Loprieno, 2013). Emotional support acts as a form of social glue (Katz and Aakhus, 2004: 8) during social interaction generating a sense of belongingness to a community of peers (Collins, 2004). Therefore, we need to focus attention on emotions expressed in social media, and by doing so we can understand the active role played by audiences in social media.

Rimé (2007, 2009) has suggested that viewers of an emotionally intense film, for instance, tend to share and discuss more that experience. The probability of sharing an experience is then linked to the intensity of the emotion inspired by the experience. Rimé (2009) also suggested that people who share their experiences and the associated emotions tend to form intimate groups. Sharing emotions creates a sense of social cohesion and intimacy with peers in the social media (Cristophe and Rimé 1997; Pennebaker, Zech, and Rimé 2001). During the communication via social media peers use specific aids to express emotions, such as emoticons, which act as 'indicators of affective states, the purpose of which is to convey non-linguistic information' (Dresner and Herring, 2010; Wolf, 2000).

Based on the above research we propose Hypothesis 1: There must be a positive relationship between the intensity of emotions elicited by an audio-visual experience and the popularity of the audio-visual product.

2.3 Emotions and language

Given that language is the main tool for expressing and understanding emotions, cross-cultural research about emotions have to take into account language a as vehicle of expressing cultural differences. Xu (2002) introduced the concept of language as an 'essential place holder', in which concepts and the abstract meaning of emotions are placed into specific categories that group similar emotions together according to previous emotional experiences. Emotion perceived and expressed by language is socially and culturally developed (Wirth and Schramm, 2005), individuals who speak the same language also largely share a similar culture.

Based on the above research, we propose Hypothesis 2: The intensity of emotional expression differs between individuals who come from different cultural backgrounds. WE measure cultural differences through the language the viewer uses to express their emotions.

3. METHODOLOGY

3.1 Data

Our research was based on datasets obtained from the TV streaming website VIKI (http://www.viki.com/) using web-scraping and text-mining techniques (Munzert et al., 2015), implemented in R Language and Environment for Data Analysis (R Core Team, 2016). Timed commenting—individuals comment appeared synchronously with video viewing—is one of the most active ways in which viewers express thoughts and feelings. All timeline comments for 173 Korean TV series available on VIKI were downloaded on 23 May 2016.

The series were classified in three categories according to the number of subscriptions: most popular (over 80,000 subscriptions), moderately popular (over 40,000 subscriptions) and

least popular (under 40,000 subscriptions). Next, we sample a set that satisfied the following criteria:(1) all episodes were available; (2) there were broadcasted during 2014-2015; (3) they had English, French, and Spanish subtitles; (4) they had between 16 and 20 episodes per series; (5) they were openly available. For each of these categories—most popular, moderately popular, and least popular—, three complete series were selected that fulfilled 5 criteria (nine series in total).

3.2 Data pre-processing

Emojis (images) and emoticons (built from keyboard characters) frequently present in viewer comments were also categorized for sentiment analysis. We therefore created a complete set of functions to convert emoticons and emojis into text strings representing their meanings. We used Emoji Unicode Tables (Whitlock, T., n.d. Retrieved 23 July 2016 from http://apps.timwhitlock.info/emoji/tables/unicode) for emoji, and the emoticon punctuation tables (Christensson, P., n.d., Retrieved 23 July 2016 from https://pc.net/emoticons/) for emoticons. We adapted the emoticon and emoji tables to the French and Spanish languages. Timed comments also contained web-slang and abbreviations, translated according to definitions from Urban Dictionary (Retrieved 20 July 2016 from http://www.urbandictionary.com/).

Additionally, as French and Spanish verbs, unlike English verbs varied according to the subject (first person, second person, singular, plural, etc.), we had to transform verbs to their infinitive form in a process called stemming for the sentiment analysis with lexicon dictionaries.

3.3 Emotion measurement

We applied the lexicon-based sentence-level sentiment classification procedure described in Liu (2012). The emotional score for each sentence was determined by summing the valence of each emotional word in the sentence, awarding (+1) for a positive word and (-1) for a negative word. (Jockers, 2014; Liu, 2010, 2012). We used dictionaries (lexicons) from the Data Science Lab, which has sentiment lexicons in various languages (Retrieved 29 April 2016 from https://sites.google.com/site/datascienceslab/projects/multilingualsentiment). However, according to Rime (2009) 'both negative and positive emotions stimulate important social interactions', therefore we computed not only a summative net emotional score, but also a positive and negative scores, as well as a summative gross emotional score.

We classified onomatopoeic expressions for laughter ('haha', 'hihi', 'hehe', etc) as positive expressions reflecting the emotions 'happy' (Ortigosa et al., 2014). We also considered question marks and exclamation marks as a graduation of the intensity of the sentiment expressed in comments, but only more than twice in a sentence ('I love it !!!!!', for instance, is more intense than 'I love it').

4. FINDINGS

4.1 Relationship between popularity and emotion

To explore the relationship between series popularity and the intensity of emotions expressed in viewers' comments, we computed sentiment scores for the comments (see Jockers, 2014). Figure 1 is a plot of the intensity of the emotions expressed regarding a TV series (x axis) and the popularity of that series (y axis). The intensity of emotions was computed as the mean of the absolute—or gross—sentiment score for each timed comment.

Thus, the higher this score, the greater the emotional intensity (positive or negative) expressed in the comments. The popularity of a TV series was computed as the VIKI statistics on number of subscriptions (most, moderately, and least popular) at the time of downloading.

The yellow horizontal lines in Figure 1 distinguish between the three popularity categories (measured as the number of subscriptions). For each category, three TV series were considered for the three different comments' languages (English, French, and Spanish, represented by pink, blue, and green circles, respectively) for each series. Regression lines reflect the strength of the relationship between emotional intensity and popularity in terms of slope: 198,480(EN), 28,062(FR), and 21,793(ES); the results point to a positive relationship, most particularly for English comments. In general, we found that the greater the emotional intensity, the greater the popularity of a series.

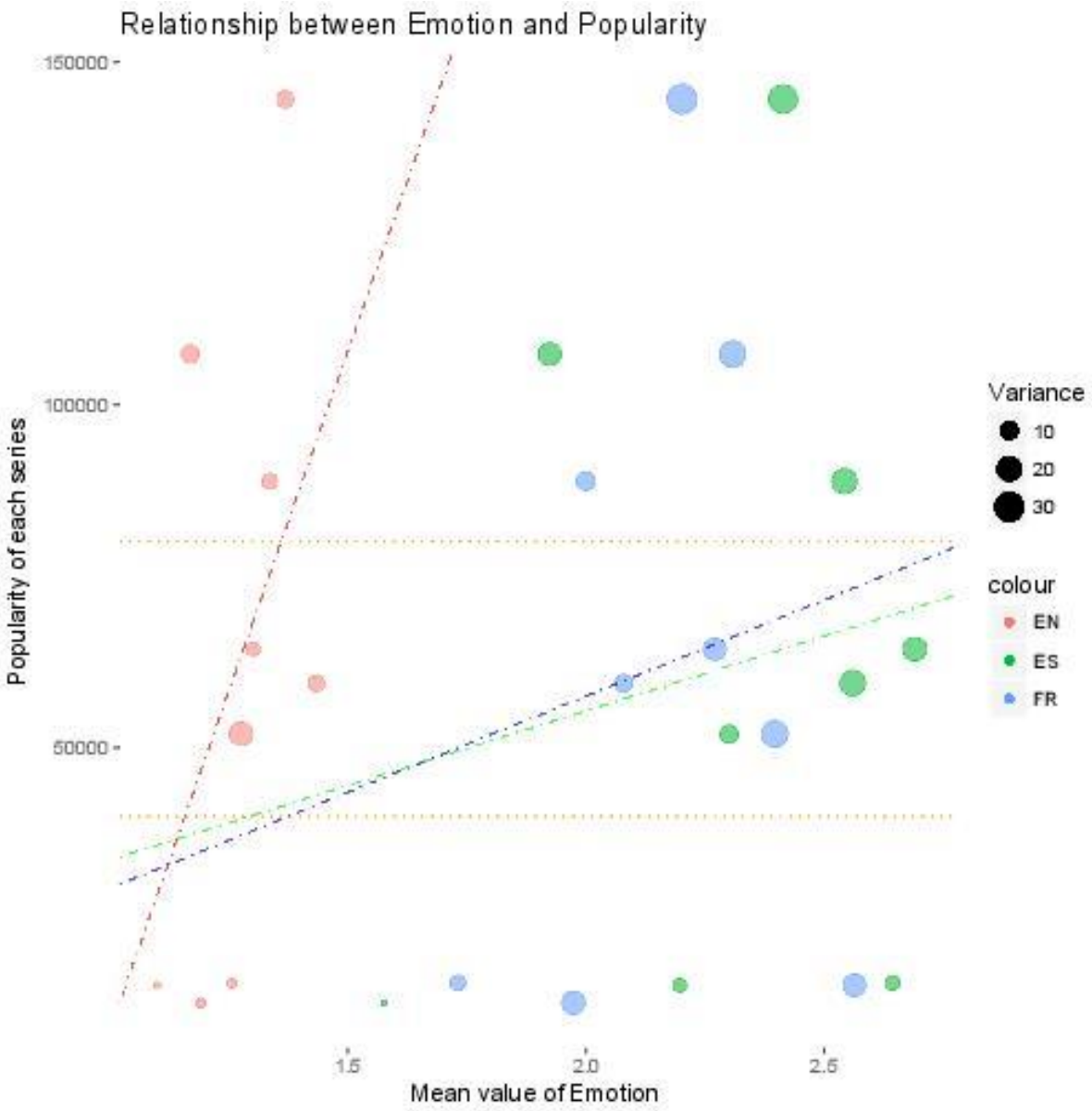

Figure 1. Relationship between TV series popularity and sentiment scores for comments.

We can conclude that the stronger the emotional experience elicited in viewers, the more popular the TV series. The mechanism whereby emotions were shared by and between

viewers gave a TV series greater exposure and therefore had the effect of promoting them (Bartlett, 1932; Rimé, 2009).

Noteworthy in Figure 1 is the lower emotional intensity of English comments on TV series compared to Spanish and French comments. For all three popularity categories, the emotional intensity of the English comments, ranging between 1 and 1.5 on average, was considerably lower than that of the French and Spanish comments, at around 2 to 2.5 on average. Furthermore, this difference seemed to widen as the popularity of TV series grew.

Figure 2 shows how emotional scores are distributed according to TV series popularity. Positive and negative emotions are plotted according to minimum values, lower quartile, median quartile, upper quartile, and outliers (more/less than 3/2 times the upper/lower quartile). It can be observed that the normal distribution of positive and negative scores was shorter for English comments than for Spanish and French comments, but was also featured by more outliers (outside the boxes). In all three languages, additionally, the number of outliers increased with TV series popularity. We can conclude that both positive and negative emotions were similarly elicited by the series. This finding would suggest that there may be a relationship between the emotions expressed in comments and the sociocultural context of the viewer. As we did not have data on the viewers' countries of origin, we used language as a proxy for sociocultural contexts.

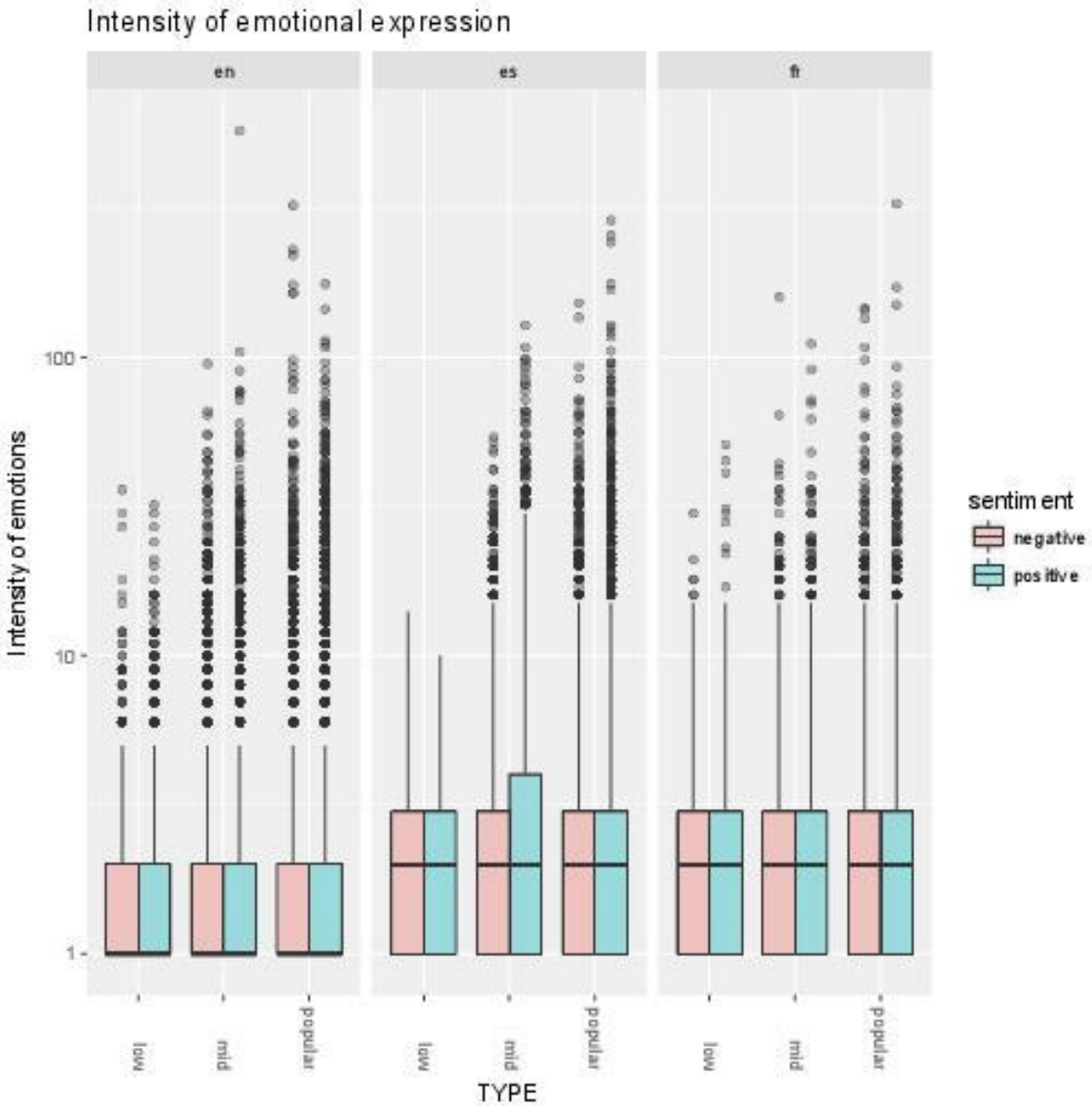

Figure 2. Box plots of positive and negative emotional scores according to language and TV series popularity.

4.2 Sociocultural context and emotion intensity

The answer to whether there is a relationship between the emotions expressed in comments and the viewer's sociocultural context, we formulated a multilevel regression model to relate sentiment scores to language (Bates et al., 2015), taking into account that while episodes are nested in series, individuals may view single episodes as well as series. We propose that differences in viewers' emotional scores, once the sociocultural context (proxy by language) is taken into account, depend on the series, nested episodes, and reactions of individuals to episodes nested in series (however, individuals may not have seen all episodes in a series). The standard regression model, $y(i)=a+bx(i)+e(i)$, is modified to consider the mean individual score depended on the attractiveness of a series, denoted as $s(i)$, the attractiveness of an episode, denoted as $p(i)$, and on individual idiosyncrasies, n(i). Consequently, the mean emotional score, a, was decomposed as $a=r + s(i) + p(i) + n(i)$, where

r is now the mean emotional score once we considered series and episode attraction as well as individual's different emotional reaction to the same episodes and series. The final model we estimated was thus $y(i)=r + bx(i) + e(i) + s(i) + p(i) + n(i)$, where e(i) is the usual regression error, and $s(i)$ is the variation accounted for by series, $p(i)$ is the variation accounted for by nested episodes, and $n(i)$ is the variation accounted for by individual differences.

Table 1 shows that differences in emotional scores for comments according to sociocultural contexts—as suggested by Figure 2—were statistically significant. The coefficients estimated for Spanish and French comments were positive and statistically significant, meaning that viewers' comments in Spanish and French expressed more positive and negative emotions than viewers' comments in English. We can observe that, in Spanish comments, variation was greater in positive emotions, whereas, in French comments, variation was greater in negative sentiments.

The random effects of series, episodes, and individuals suggests that there was more variation regarding nested episodes (within-series variation) than in series (between-series variation), and that the variation between individuals was higher than the variation in episodes and series.

Table 1. Multilevel analysis according to language.

Predictors	*Dependent Variables*								
	Total.sentiment			Positive sentiment			Negative sentiment		
	Estimate	*Conf.Int*	*p-value*	*Estimate*	*Conf.Int*	*p-value*	*Estimate*	*Conf.Int*	*p-value*
Fixed Parts									
(Intercept)	1.28	1.22-1.34	**<.001**	0.79	0.73-0.85	**<.001**	0.49	0.45-0.53	**<.001**
Language(es)	0.84	0.79-0.90	**<.001**	0.58	0.54-0.62	**<.001**	0.27	0.25-0.30	**<.001**
Language(fr)	0.89	0.81-0.97	**<.001**	0.41	0.34-0.47	**<.001**	0.49	0.45-0.53	**<.001**
Random Parts									
σ^2	12.345			7.398			3.877		
$\tau_{00,\ \mathrm{user.id}}$	1.358			0.706			0.227		
$\tau_{00,\ \mathrm{episode:\ series.id}}$	0.012			0.021			0.007		
$\tau_{00,\ \mathrm{series.id}}$	0.004			0.005			0.003		
$N_{\mathrm{user.id}}$	27462			27462			27462		
$N_{\mathrm{episode:series.id}}$	152			152			152		
$N_{\mathrm{series.id}}$	9			9			9		
Observation	331309			331309			331309		
R^2/Ω_{0^2}	.141/.135			.124/.116			.089/.083		
Deviance	1786951.572			1616229.058			1398468.865		

All this add evidence in favour of Hypothesis 2, the impact of language on emotional scores was statistically significant, indicating that emotions were embedded and expressed differently in different languages. We can conclude that, once we take into account that series and episodes may differ in emotional content and that individuals may have different moods, the intensity of emotions expressed in comments differed according to language.

5 DISCUSSION

Our research contributes to understand the relationship between popularity and emotions, and between emotions and culture in cross-cultural audiences. As Bakardjieva (2003) and Rimé (2009) have proposed, audiences participate in social media not only for cognitive reasons, but also to be able to share experiences and common interests. Our findings suggest that active audiences in a global community organized around an interest in Korean audio-visual products share emotions and intellectual interactions in a digital space and, in doing so, may enhance the popularity of those audio-visual products.

To describe, from a cross-cultural point of view, the relationship between popularity and emotions, we first identified the emotional words and non-verbal aids (emoticons and emojis) that viewers used to share their experiences while watching Korean TV series and episodes. We then described the relationship between the emotions expressed and the popularity of the TV series, with our results clearly pointing to a positive correlation between popularity and emotions expressed in comments, particularly in English comments, thereby providing support for our Hypothesis 1.

However, the corresponding correlations for Spanish and French were not as strong as for English. To explore this apparent contradiction, we investigated the strength of the emotion-popularity association and the volume of comments in the three languages. This additional analysis could provide further evidence in favour or against the two competing theories that try to explain why artists' fame are unequally distributed. Thus, Rosen's quality theory (1981, 1986) proposes that a few top-quality artists will achieve the most commercial success, whereas Adler's popularity theory (1985, 2006) proposes that obtaining a significant share of the market is crucial to becoming the most popular artist. One way to compare the predictive capacity of these theories is relating the emotions to popularity taking into account the size of the cultural market.

If the process of achieving popularity is conditional on the size of the market, this pattern of association would be consistent with Adler's theory. According to Adler's theory of superstars and talent (1985, 2006), it is not necessarily the talent of an artist that converts him/her into a superstar, but the desire of consumers to share their experience with the artists, which they do by sharing their feelings. This desire to share emotional experiences is a dynamic process that grows exponentially with the size of the community. The more audiences share their emotional experiences of a performance, the more people listen to or view it, with the performer correspondingly becoming increasingly popular. The logic of this process is that the most popular performer is converted into the most talented performer. Returning to our audio-visual products, for a TV series with subtitles in three different languages (English, French and Spanish), obviously—since the content is the same—the artistic merit is the same, irrespective of the language of the comments. However, the English-speaker group was far larger than the other language groups. In our data the number of English comments (215,893) nearly three times and seven times the number of Spanish (81,332) and French comments (34,084), respectively. As a result, we could expect that the dynamic process of consumption uptake, boosted by the sharing of emotions, would be faster among English speakers. The fact that the link between emotion intensity and the popularity

of an audio-visual product is stronger for larger domains of viewers would therefore explain our results.

As for the emotional intensity expressed through emotional words, commenters using the Spanish language were more expressive than those using French and English. Also, emotional score variation was greater for the Spanish and French comments, whereas English comments obtained the most homogenous emotional scores. Our Hypothesis 2 proposed that the intensity of emotional expression differs between individuals who speak different languages. To test this hypothesis, we built a multilevel model that took into account that comments were nested in episodes and episodes in series, whereas individuals were not nested (they could watch as few or as many episodes of a series as they wished). Our findings support Hypothesis 2, as language differences were statistically significant when we took into account the nested nature of comments. As mentioned earlier, language is an 'essential place holder' (Xu, 2002) because it converts emotional concepts into abstract meanings according to previous emotional experiences, which change according to different social and cultural contexts. Emotions have a micro level — referring to individuals — and a macro level — referring to the sociocultural context where individuals learn to express their emotions (Beck, 2014). In our model, we captured the micro level with the random effect of individuals, and the macro level with the random effect of series and episodes. If we had access to information on the commenters' countries of origin we would be able to test whether variance differences according to language were due to differences in social contexts.

6 CONCLUSIONS

We have contributed to the knowledge of cross-cultural audio-visual consumption studying the western audiences of Korean productions. We have described the relation between popularity and the emotions shared among peers. We have shown that the relationship between emotion and popularity is mediated by the size of the market, as proposed by Adler's (1985, 2006) superstar theory. We also provide evidence that emotion intensity varies depending on the commenting language (after taking into account that episodes are nested in series, and that individuals may or may not be nested). This fact suggests the need for further research with a richer set of data regarding emotions so as to disentangle the effect of language from the effect of the commenter's country.

Limitations. The main limitation of our research is that our data had little information on individuals. Even though user profiles yielded some personal data, no information was reported about nationality or place of residence (this information, in fact, is treated as confidential by VIKI). Were this information available, we would have been able to separate the effect of culture inside language from the effect of sociocultural context.

Further research. Further research in this area may include the cultural effect embedded in language from the social contexts where language is used to communicate emotions. In particular, it would be possible to discriminate between the effect of language and the effect of the country of origin. Another future research line will compare, for commenters sharing the English language, the accuracy of the emotional score computed using procedures operating on words versus sentences as units of analysis.

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