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# Differences in emotional reactions of Greek, Hungarian and British users of English when watching television in English<sup>1</sup>

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## Abstract

We investigated differences in self-reported Emotional Reactions (ER) of first (L1) and foreign (LX) language users of English when watching television in English and identified the predictors. Participants were 271 British citizens, 282 Greek and 271 Hungarians living in their home country. English LX users had significantly lower values for ER compared to L1 users. Frequency of watching television in English and Trait Emotional Intelligence were the strongest predictors of ER among LX users. No significant predictors emerged for L1 users. Significant differences emerged between the Greeks and Hungarians despite having similar levels of proficiency. This suggests that the implicit assumption in previous research that any group of LX users with the same L1 and LX represent **all** LX users in the world is incorrect.

**KEYWORDS:** Emotional reactions, English L1 users, English LX users, Trait Emotional Intelligence, television, news, films

## Résumé

L'étude présente porte sur les sources des Réactions Emotionnelles (RE) rapportées d'utilisateurs de l'anglais comme première langue (L1) ou comme langue étrangère (LX) regardant la télévision en anglais. Les participants consistaient de 271 citoyens britanniques, 282 Grecs et 271 Hongrois habitant dans leur pays natal. Les utilisateurs de l'anglais LX avaient des valeurs de RE significativement plus basses que celles des utilisateurs de l'anglais L1. La fréquence de regarder la télévision en anglais et l'intelligence émotionnelle étaient les prédicteurs les plus puissants des RE parmi les utilisateurs de LX. Aucun prédicteur significatif n'a émergé pour les utilisateurs de l'anglais L1. Des différences significatives sont apparues entre les Grecs et les Hongrois malgré des niveaux de compétence similaires. Cela suggère que l'hypothèse implicite dans les recherches précédentes selon laquelle tout groupe d'utilisateurs LX avec les mêmes L1 et LX représente la totalité d'utilisateurs d'une LX dans le monde est incorrecte.

**MOTS CLÉS :** Réactions émotionnelles, utilisateurs de l'anglais L1, utilisateurs de l'anglais LX, intelligence émotionnelle, télévision, actualités, films.

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## INTRODUCTION

One remarkably consistent finding in multilingualism research is that emotion words and phrases in the foreign language (LX) tend to feel emotionally weaker than equivalent words and expressions in the first language (L1) (Dewaele, 2013; Pavlenko, 2005, 2012; Resnik, 2018). The first researcher to mention this “emotional-detachment effect” was Marcos (1976) who had observed that consecutive bilinguals switched to their L2 during psychotherapy to distance themselves from troubling conversation topics. He speculated that the L2 acts as a barrier allowing the verbalisation of highly charged material as users “feel ‘protected’ by the linguistic detachment” (p. 558).

Researchers have since suggested that the main reason for this difference between the L1 and an LX acquired later in life is the context of learning of both languages. L1 users go through a process of intense emotional socialisation in early childhood where the L1 develops together with autobiographical memory and emotion regulation systems, resulting in strong integration of language and emotion (Pavlenko, 2012). Thus, L1 emotion words and phrases become emotionally grounded (Caldwell-Harris, 2015). In contrast, LX emotion words and phrases picked up in the foreign language classroom are less likely to have such grounding and may feel ‘disembodied’, “used freely by speakers who do not experience their full impact” (Pavlenko, 2012, p. 421). As a result, multilinguals often perceive that emotion words in their LXs lack the emotional power of the equivalent words in the L1(s) (Dewaele, 2013). However, through regular use and exposure, LX emotion words gradually gain semantic and conceptual granularity and acquire an emotional resonance that starts to approximate that of L1 users (Dewaele, 2013; Pavlenko 2005).

The present study is the first multilingualism study attempting to capture differences in emotional reactions in the L1 and LX as experienced in real-life situations, using a combination of measures to mitigate the effect of retrospective reporting. This approach diverges from previous studies that relied on qualitative accounts or single self-report items. Our composite dependent variable reflects self-reported Emotional Reactions when watching television news and films in an L1 or LX. These include self-reported frequency of feeling emotional, frequency of laughter and degree of trust. We will explore to what extent British L1 and Greek and Hungarian LX users of English, differ in terms of self-reported Emotional Reactions and whether the same sociobiographical, linguistic and psychological variables predict their self-reported Emotional Reactions in English L1 or LX.

## LITERATURE REVIEW

### *Multilingualism, emotions and emotional acculturation*

Li (2018) defined a multilingual as a person “who can communicate in more than one language, be it active (through speaking and writing) or passive (though listening and reading)” (p. 4). A crucial aspect of this definition is that there is no mention of proficiency. Similarly, Dewaele (2018a) proposed to distinguish between a multilingual’s L1(s) and LX(s) based on chronology of acquisition rather than level of proficiency. An L1 is a language acquired before the age of three, an LX refers to any language acquired later. Because proficiency is not part of the definition, both L1 and LX users may have minimal to maximal proficiency in the language in various discourse domains, and in various language skills, and these skills may change over time. This dynamic view of the multilinguals’ languages is at the heart of the concept of emotional multi-competence resulting from LX emotional socialisation or acculturation (Dewaele, 2016b).

Emotional acculturation is the focus of De Leersnyder’s (2014) work on migrants. She found that migrants adopt the host culture patterns of emotional experience in the course of two generations. Emotional acculturation re-aligns migrants’ thinking, feeling, and acting according to the norms of the new cultural environment.

### *Self-reports on emotions in the L1 and LX of multilinguals*

Research on emotions and multilingualism that used self-reports has consistently shown that languages acquired early in life (L1s) are often preferred to express various emotions because these are often reported to have more emotional resonance compared to LXs (Dewaele, 2013, 2015; Ożańska-Ponikwia, 2013; Pavlenko, 2005, 2012). Although LXs can be used to communicate emotions – especially after intense secondary emotional socialisation – they often lack the emotional resonance of L1s. Self-reports from 1579 adult multilinguals revealed that they typically preferred the L1 for swearing and that L1 swearwords were more emotionally powerful than LX swearwords (Dewaele, 2004, 2010, 2013). The analysis of a sub-group of 486 pentalinguals showed that early acquisition of the LX and context of acquisition were linked to higher emotional resonance and use of the LX for swearing (Dewaele, 2013). Other predictors included strong socialisation and a wide network of LX interlocutors. The effects of gender, age, education proficiency and frequency of use of the LX are less clear-cut. Dewaele (2011) compared the language preferences of 386 adult multilinguals who had declared to be maximally proficient in the L1 and LX and to be using both constantly for swearing, for communicating emotions to various interlocutors including praising and disciplining children. Participants preferred the L1, which they rated as significantly more colorful, rich, poetic, and emotional than the LX, while they reported more anxiety in their LX. Similar patterns emerged in Resnik’s (2018) study on 167 multilinguals. She found that all participants preferred the L1 for swearing and for expressing emotions and that the emotional weight of swearwords was higher for the L1 than the LX. However, the L1 overall was not considered more emotional than the LX. A study by Dewaele (2017) on perception and self-reported use of the word “cunt” by 1159 L1 and 1165 LX users of English showed that LX users underestimated its offensiveness. Variation in perception in the group of LX users was linked to personality, context and age of onset of acquisition of the LX, proficiency and frequency of use of the LX and having lived in an LX-speaking environment. Similar patterns have been found in Dewaele (2008) for the emotional force of the phrase “I love you”. Close to half of the 1459 participants felt that the phrase was strongest in their L1, a third felt that it was equally strong in their L1 and an LX, while a quarter felt it was stronger in their LX – typically because they had fallen in love with a speaker of that language. Similarly, Dewaele (2015) found that the L1 was the preferred language for emotional inner speech of 409 pentalinguals and that an early age of onset of acquisition of the LX was linked to more frequent use of that LX for emotional inner speech. A study by Ożańska-Ponikwia (2019) on 72 Polish-English bilinguals indicated that the emotional resonance of the English expression “I love you” was lower than the Polish equivalent expression “Kocham Cię” but that the difference narrowed among those who had lived in the English-speaking environment for longer, felt more proficient in English and used the language more.

The lack of emotional resonance of the LX was mentioned as an obstacle to the communication of emotions in romantic intercultural relationships among 429 multilinguals (Dewaele & Salomidou, 2017). They reported difficulty in communicating subtle feelings in a sophisticated manner because of gaps in their pragmalinguistic and sociopragmatic knowledge (Dewaele, 2018b). They felt a little hazy about the strength and the in/appropriateness of the use of certain words in specific social contexts. However, the lack of emotional resonance of the LX can have positive psychological consequences. Caldwell-Harris et al.’s (2011) 64 Chinese-English bilinguals explained in interviews that expressing emotions in L1 Mandarin had more emotional resonance, but they preferred the more detached English because of the more relaxed social constraints and the freedom it gave them. The detachment of the LX can also allow multilinguals to access certain emotions or to distance themselves from them (Rolland, Dewaele, & Costa, 2017). In order to avoid L1 words that had acquired unbearable emotional intensity during traumatic events such as rape and torture, clients in psychotherapy may switch to the LX which allows them to invent and perform a new self and which allows them to throw off the shackles of shame deeply embodied in their L1 (Cook, 2019).

Research into emotions in the L1 and an LX expanded in new directions, including reactions to truthful statements and lies, and laughter in reaction to funny input. The former was the focus of Caldwell-Harris and Ayçiçeği-Dinn (2009) who interviewed 45 Turkish LX users of English about their language preferences for lying. It showed that over half of the participants preferred lying in Turkish rather than English, a quarter had no preference and the remaining participants preferred English. Participants reported that the lies were not experienced as strongly in the LX but lower proficiency boosted anxiety when lying in the LX. The latter was the topic of Chen and Dewaele (2019). As laughter results from emotional shifts from surprise to amusement, they investigated LX humour appreciation among 272 Chinese LX English users and 94 English L1 users residing in the UK. They found that the LX users' funniness ratings of two short clips from British sitcoms were significantly lower than those of L1 users. They also found that LX users needed to reach an upper independent level before a link emerged between humour appreciation and proficiency.

A final strand of research deals with emotion recognition. Lorette and Dewaele (2020) found no difference between the scores of 557 L1 and 881 LX users of English watching six video-recordings of a British actress displaying various emotions. L1 users were found to do significantly better when the stimulus was reduced to audio-only. Using the same stimuli Dewaele, Lorette and Petrides (2019) found that 150 British did not outperform 151 American L1 users of English. Participants who scored higher on linguistic proficiency and Trait Emotional Intelligence (Trait EI)<sup>1</sup> recognised emotions more accurately. An interaction emerged between proficiency and Trait EI, with low proficiency participants relying more on their Trait EI to recognise the emotions. In contrast, Trait EI turned out to be unrelated to Spanish L1 and LX users' emotionality and pleasantness ratings of audiovisual and visual stimuli in Mavrou and Dewaele (2020).

In apparent contradiction to the general pattern of the L1 having stronger emotional resonance, Dewaele (2016a) found that his 1165 LX users of English using LX users' ratings of negative emotion words rated the emotional intensity of 29 out of 30 negative emotion words more highly than 1159 L1 users. This could be because LX users had attached a "red flag" to LX negative words, inaccurately inflating their perceived emotional power. Similar patterns emerged in Dewaele and Moxsom-Turnbull (2019), who compared emotionality ratings of 41 English L1 users and 56 English LX users who had watched two videos with low and medium co-speech gestural intensity. The LX users were found to rate both videos as significantly more emotional than L1 users. The authors speculated that the LX users were experienced enough in English to be aware of the detachment effect and may have inflated their initial ratings, resulting in higher values than the L1 users. Finally, Mavrou and Dewaele (2020) found that 95 Spanish LX users rated emotionality and pleasantness higher than 79 L1 users in a short animated film and a picture book version of it. Trait EI had no effect. The authors suggest that LX users might have been aware of the LX detachment effect and overcompensated when providing ratings.

### ***Physiological reactions to emotional input in the L1 and LX of multilinguals***

Evidence of the detachment effect has been found in LX users' weaker physiological reactions to emotional stimuli in their LX compared to their L1. Harris, Ayçiçeği and Gleason (2003) measured skin conductance of 32 Turkish-English bilingual speakers who were listening or reading positive, negative and neutral words in their Turkish L1 or English L2. Stronger skin conductance responses (SCRs) were obtained for the taboo words and reprimands in the L1. Harris (2004) discovered that age of onset of acquisition of the LX played a crucial role in SCRs in the LX. Using the same paradigm, Caldwell-Harris and Ayçiçeği-Dinn (2009) found that their 70 Turkish university students had stronger SCRs when listening to lies than to true statements. Surprisingly, SCRs were larger in English than in Turkish despite ratings showing that lies in Turkish were more strongly felt than English lies. Finally, Caldwell-Harris et al. (2011) found that their 64 Chinese-English participants showed similar SCRs in their L1 and L2 for insults, reprimands and taboo words, and that they only reacted more strongly to terms of endearment in English L2.

Using the same paradigm, Baumeister et al. (2017) also found significantly higher SCRs for L1 emotion words in 32 highly proficient English-Spanish bilinguals. The authors argued that the

processing of emotional L1 words is more grounded in embodied simulations than the processing of LX words and that this affected memory processes, namely the encoding of emotion words. Jankowiak and Korpala (2018) discovered similar patterns in SCRs – but not in self-reports- of 27 late proficient Polish L1–English L2 bilinguals who read or listened to emotionally-laden narratives presented in both languages.

Psychologists have also used other physiological measures. Iacozza, Costa and Duñabeitia (2017) observed pupil dilation of 54 Spanish-English bilingual participants. They found that emotional sentences resulted in augmented pupil dilations compared to neutral sentences. However, pupil dilations were smaller in the LX than in the L1. Adopting a similar approach, Toivo and Scheepers (2019) focused on pupil dilation in response to high- versus low-arousing words. Their participants were 32 English monolinguals, 32 Finnish-English and 32 German-English late bilinguals. They found that high-arousing words in English were linked to more dilated pupils than low-arousing words in the L1 but not in the L2, which they interpret as evidence of the lower emotional resonance of the L2.

However, Eilola and Havelka's (2011) findings, combining behavioural responses and electrodermal data, deviated from the studies reviewed above. They monitored the SCRs of their participants who were performing a Stroop task with neutral, positive, negative, and taboo English words. Their data did not reveal any difference in reaction time (Stroop task) nor in SCRs between their L1 and LX participants. Moreover, the data suggest an effect of valence on emotional reactions, as neutral and positive words elicited significantly different reactions than negative and taboo words. Similarly, Conrad, Recio and Jacobs' (2011) and Opitz and Degner's (2012) studies revealed no difference in early posterior negativity amplitude between L1 and LX participants.

An intriguing finding is that physiological measures and self-reported ratings of emotionality do not always match. Caldwell-Harris et al. (2011) found that ratings of the emotional intensity of endearments were similar in Mandarin and English, in contrast to the SCR findings. Iacozza et al. (2017) found no significant difference in participants' subjective ratings of emotional impact after reading each sentence in the L1 and L2, despite finding differences in participants' automatic responses. The authors attribute this to a "reduction in self-regulating affective mechanisms" (p. 8).

Another possible explanation for the absence of the expected detachment effect is that LX users are typically aware of the LX detachment effect and may, therefore, compensate when asked to rate the emotionality of specific emotional stimuli, cancelling the difference or even swinging it the other way (Dewaele & Moxsom Turnbull, 2019, Mavrou & Dewaele, 2020).

Finally, the modality in which stimuli are presented can also affect the responses, with audio stimuli causing bigger SCRs than the written equivalent appearing on screen (Harris et al., 2002, Harris, 2004), though it had no effect in Mavrou and Dewaele (2020).

## RESEARCH QUESTIONS

The following research questions were formulated:

- 1) Are the self-reported Emotional Reactions of English L1 and English LX users different?
- 2) What are the predictors of English L1 users' and English LX users' self-reported Emotional Reactions when watching television news and films in English?
- 3) How different are the self-reported Emotional Reactions of Greek and Hungarian English LX users when watching television news and films in English and are they equidistant from the values of the English L1 users?

## Methodology

### *Participants*

A total of 825 users of English (419 females, 405 males<sup>2</sup>) participated in the study. They included 272 adult British L1 users of English (148 females, 124 males) and 553 LX users of English (271 females, 281 males). Gender distribution across L1 and LX users was equivalent ( $p = .160$ , two-

sided Fisher's exact test). The LX users of English consisted of 282 Greek and 271 Hungarian participants. Overall, there were 79 monolinguals (all English L1 users), 210 bilinguals, 269 trilinguals, 132 quadrilinguals, 71 pentalinguals, 33 sextalinguals and 31 participants with knowledge of between 7 and 12 languages. The Greek and Hungarian participants all had English as an LX; many also reported knowing French and German. English L1 users mostly had French as an LX. The English LX users spoke a significantly higher number of languages compared to English L1 users ( $t(432.44) = -6.34, p < .001$ ). These results are not completely unexpected, as the English LX group had by definition to be at least bilingual, whereas this was not a criterion for the English L1 group.

Over half the sample was aged between 25 and 44 in both groups. The English L1 group did have a larger proportion of over-55s (46.5%) compared to the English LX group (10%). Close to half of the participants in the English L1 group had a secondary education or below (46.1%), compared to a quarter in the English LX group. The proportion of university-educated participants was thus higher in the English LX group.

Participants reported how frequently they used English in their daily lives (i.e. productively) and how frequently they watched television in English (i.e. receptive use). Scores ranged from 1 (never) to 7 (constantly). The English L1 users reported constant use of English and of watching television in English. The English LX group reported lower frequency of use of English ( $M = 4.62, SD = 1.66; t(817.04) = 29.69, p < .001$ ) and of watching English television ( $M = 3.99, SD = 1.87; t(656.19) = 31.84, p < .001$ ). The values for frequency of use of English were significantly higher for the Greek LX users than for the Hungarians ( $M$  Greeks = 5.03,  $SD = 1.53$ ,  $M$  Hungarians = 4.20,  $SD = 1.68; t(541.66) = 6.03, p < .001$ ). The same difference emerged for frequency of watching television in English ( $M$  Greeks = 4.41,  $SD = 1.80$ ,  $M$  Hungarians = 3.55,  $SD = 1.83; t(551) = 5.58, p < .0001$ ).

The recruitment of participants was organised via the television broadcaster Euronews. Euronews used quota sampling, to constitute a panel of paid volunteers matching specific selection criteria (i.e. adult L1 users of British English and LX users of English who had either Greek or Hungarian as an L1, and gender balance). Participants filled out an online questionnaire.

As the English LX participants come from Hungary and Greece, it is necessary to present some relevant background information. Hungary is a former Warsaw pact country where Russian was the main foreign language for over four decades. After 1989, the former Russian teachers were retrained in English and German in which they reached lower levels of mastery (Nikolov, 2009). By contrast, Greece has been anchored in the Western bloc for a much longer time and children typically start learning English, the first foreign language in the education system, around the age of seven. Greek students have been found to perform well above the European average (Dendrinou, Zouganeli, & Karavas, 2013, p. 27). Differences in the knowledge of English may also be linked to its presence on television and in cinemas. Hungary is a country where foreign material is dubbed, while Greece has a long tradition of presenting films and television programmes in English with Greek subtitles. This has been linked to children's substantial English vocabulary knowledge after a mere three and a half years of formal instruction in English (Masoura & Gathercole, 2005).

### ***Instruments***

After providing the sociobiographical information that was presented in the previous section, participants filled out the LexTALE test, a lexical decision test developed by Lemhöfer and Broersma (2012) for low intermediate to (very) advanced English users. This consists of 60 words and pseudowords. Participants have to indicate whether or not an item is an existing English word. The resulting score is a good indicator of general proficiency and is increasingly used in multilingualism research (cf. Jankowiak & Korpál, 2018). Participants with scores between 80 and 100 are considered advanced users (C1-C2), those with scores between 60 and 79 are upper intermediate users (B2), while those with scores of 59 and below are lower intermediate (B1) or basic users (A2) (Lemhöfer & Broersma, 2012, p. 341). Unsurprisingly, the English L1 users ( $M = 90.95, SD = 12.31$ ) scored significantly higher than the LX users ( $M = 70.73, SD = 15.48; t(668.53)$

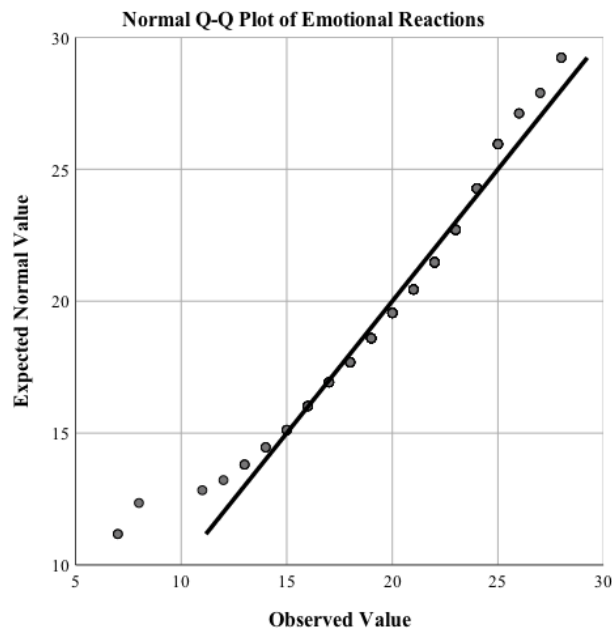
= 20.14,  $p < .001$ ). The difference between Greek and Hungarian LX users was non-significant ( $M$  Greeks = 69.59,  $SD = 12.64$ ,  $M$  Hungarians = 71.93,  $SD = 17.91$ ;  $t(483.88) = -1.77$ ,  $p = .075$ ).

Participants also completed the short form of the Trait Emotional Intelligence Questionnaire in English (Petrides, 2009). This is comprised of 30 items with 7-point Likert scales ranging from 1 (completely disagree) to 7 (completely agree). It allows the calculation of a global Trait Emotional Intelligence (EI) score. Reliability analysis revealed good internal consistency for the 30 items in both groups (Cronbach's  $\alpha = .80$  for the English L1 group and Cronbach's  $\alpha = .75$  for the English LX group). The English L1 users ( $M = 4.72$ ,  $SD = 0.81$ ) scored significantly higher than the LX users ( $M = 4.56$ ,  $SD = 0.62$ ;  $t(428.07) = 2.96$ ,  $p < .003$ ). These differences might be due to the age differences reported above, as previous studies have shown that Trait EI increases with age (Petrides, 2009). A two-tailed t-test revealed that the difference between Greek and Hungarian LX users was also significant ( $M$  Greeks = 4.63,  $SD = 0.63$ ,  $M$  Hungarians = 4.48,  $SD = 0.59$ ;  $t(551) = -1.76$ ,  $p < .003$ ). The effect size is very small: Cohen's  $d = .246$  (Plonsky & Oswald, 2014).

The dependent variable was a composite score of four items reflecting frequency and intensity of self-reported Emotional Reactions when watching television news and films in English without subtitles. The first item was "How frequently do you feel emotional when watching the news in English?" and the second item was "How frequently do you feel emotional when watching films in English?". Both items were accompanied by a 7-point Likert scale ('never' = 1 - 'always' = 7). The third item was "How frequently do you laugh watching a funny film in English?". The anchors were 'never' = 1 and 'always' = 7. The fourth item was "How much do you trust a news report in English?". The anchors were 'not at all' = 1 and 'completely' = 7. The combination of frequency and intensity measures allow us to capture two dimensions that do not necessarily overlap, as one may feel frequently emotional but not necessarily very emotional when watching television. The Cronbach's alpha analysis suggests that internal consistency of the scale is good ( $\alpha = .74$  for the English L1 group,  $\alpha = .81$  for the English LX group). The mean score for self-reported Emotional Reactions was 15.51 ( $SD = 3.40$ ), with a range from 3 to 21.

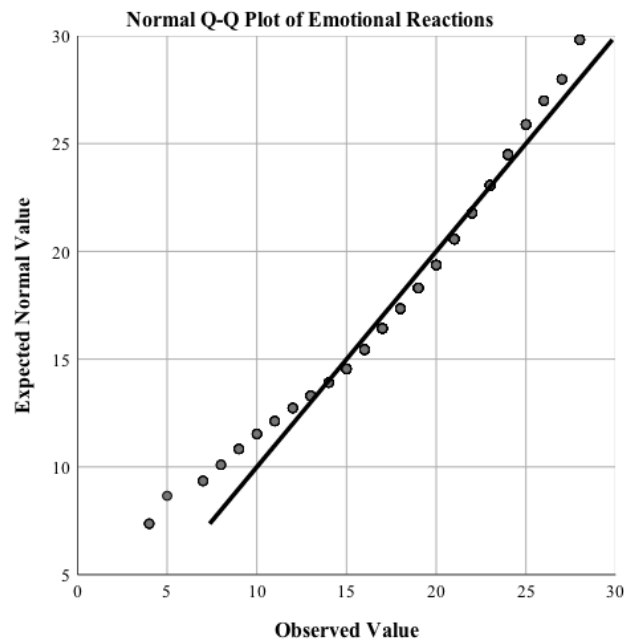
A look at the distribution of the values of self-reported Emotional Reactions and the calculation of a quantile-quantile plot (Q-Q plot) for the L1 and LX users (see Figures 1 and 2, respectively) suggest that they follow a normal distribution reasonably well, with more deviation at the lower end of the tail. Given the large sample sizes and the mild deviation from normality, we opted for the more powerful parametric statistics.

**FIGURE 1.** Q-Q plot for Emotional Reactions in the English L1 group



**FIGURE 2.** Q-Q plot for Emotional Reactions in the English LX group





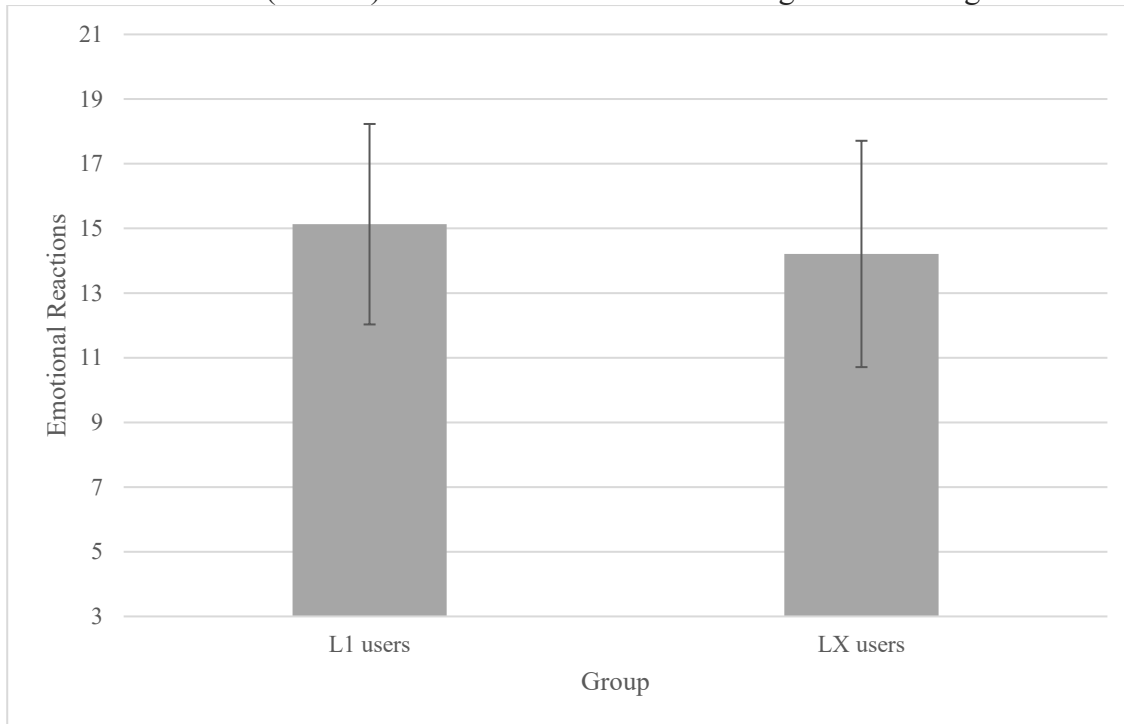
The research design and questionnaire obtained approval from the Ethics Committee of the School of Social Sciences, History and Politics at Birkbeck, University of London. Each participant's individual consent was obtained at the start of the survey.

### *Statistical analyses*

The statistical analyses proceeded in different steps. Firstly, an independent samples t-test was run on the complete database in order to investigate differences between the English L1 and LX groups. Secondly, in order to identify the best predictors of self-reported Emotional Reactions within the English L1 and LX groups, we ran preliminary analyses (Pearson correlations, independent samples t-tests and ANOVAs). Variables that turned out to be significantly linked to self-reported Emotional Reactions were subsequently included in stepwise multiple regression analyses. A final independent samples t-test was used to look for differences between the two English LX groups and the English L1 group.

## **RESULTS**

An independent two-tailed samples t-test provided an answer to the first research question. English L1 users had a significantly higher score on self-reported Emotional Reactions than the English LX users (Mean difference = .91;  $t(622.12) = 3.84$ ,  $p < .0001$ ). Cohen's  $d$  is .275, which is a very small effect size (Plonsky & Oswald, 2014)<sup>3</sup>. The means for both groups are visualised in a bar chart (see Figure 3).

**FIGURE 3.** Means (and SD) for Emotional Reactions in English in the English L1 and LX groups

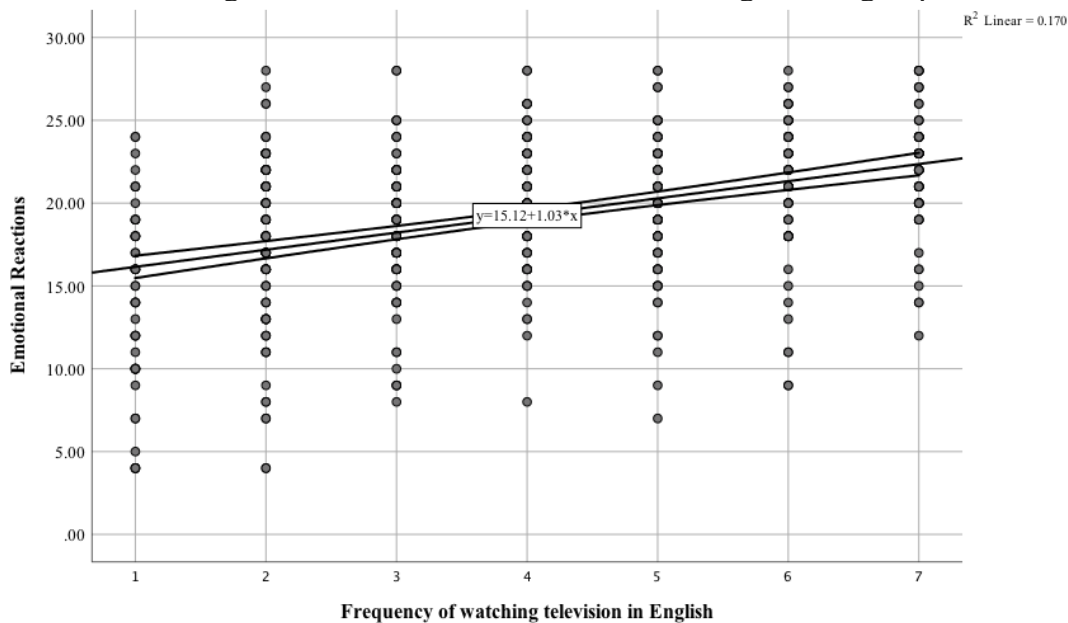
The second research question focused on differences between the predictor variables of self-reported Emotional Reactions in the English L1 group and the English LX group. Two separate sets of analyses were run for each group. Preliminary Pearson correlation analyses of the data for English L1 users revealed no significant relationships between self-reported Emotional Reactions and frequency of using English ( $r = .047$ ) nor with frequency of watching English television ( $r = .047$ ). Marginally significant positive relations emerged between self-reported Emotional Reactions and English proficiency ( $r = .137, p = .057$ ) and Trait EI ( $r = .139, p = .054$ ). Gender had no effect on the dependent variable in the L1 group ( $t(191) = -1.37, p = .172$ ). Two ANOVAs with education level and age group as independent variables showed no significant effect on self-reported Emotional Reactions in English L1 ( $F(3, 189) = .86, p = .46$ , and  $F(4, 188) = 1.27, p = .28$ , respectively). Given the absence of significant links between the independent variables and self-reported Emotional Reactions, no regression analyses were carried out.

A very different picture emerged for the LX group, with significant positive correlations between self-reported Emotional Reactions in English LX, on the one hand, and English proficiency ( $r = .200, p < .0001$ ), frequency of English use ( $r = .400, p < .0001$ ), frequency of watching television in English ( $r = .412, p < .0001$ ), and Trait EI ( $r = .215, p < .0001$ ). A significant gender effect was also found among LX users ( $t(550) = -2.69, p < .002$ , Cohen's  $d = .230$ , i.e. a very small effect size), with women scoring higher for self-reported Emotional Reactions ( $M = 19.78, SD = 4.64$ ) than men ( $M = 18.71, SD = 4.68$ ). ANOVAs showed that education level had a significant effect on self-reported Emotional Reactions in English ( $F(3, 267) = 2.82, p < .039$ ) but no such effect was found for age group ( $F(4, 266) = 1.74, p = .14$ ). A stepwise multiple regression analysis was carried out to measure the effect of proficiency, Trait EI, frequency of English use, frequency of watching television in English, gender and education. To control for the fact that the Greek and Hungarian LX groups differed in some respects, nationality was also included in the regression analyses. The Durbin-Watson value was 1.94 and the VIF values ranged from 1.04 to 1.95, suggesting no problems with autocorrelation or multicollinearity. All variables included in the analysis contributed significantly to the prediction of self-reported Emotional Reactions in English ( $F(6, 546) = 31.87, p < .0001$ ), with an adjusted  $R^2$  of .256, which represents a small-to-medium effect size (Plonsky & Ghanbar, 2018).

The strongest predictor was frequency of watching television in English ( $\beta = .235, t = 4.68, p < .0001$ ), explaining 17% of variance, followed by Trait EI ( $\beta = .109, t = 2.82, p < .005$ ), explaining

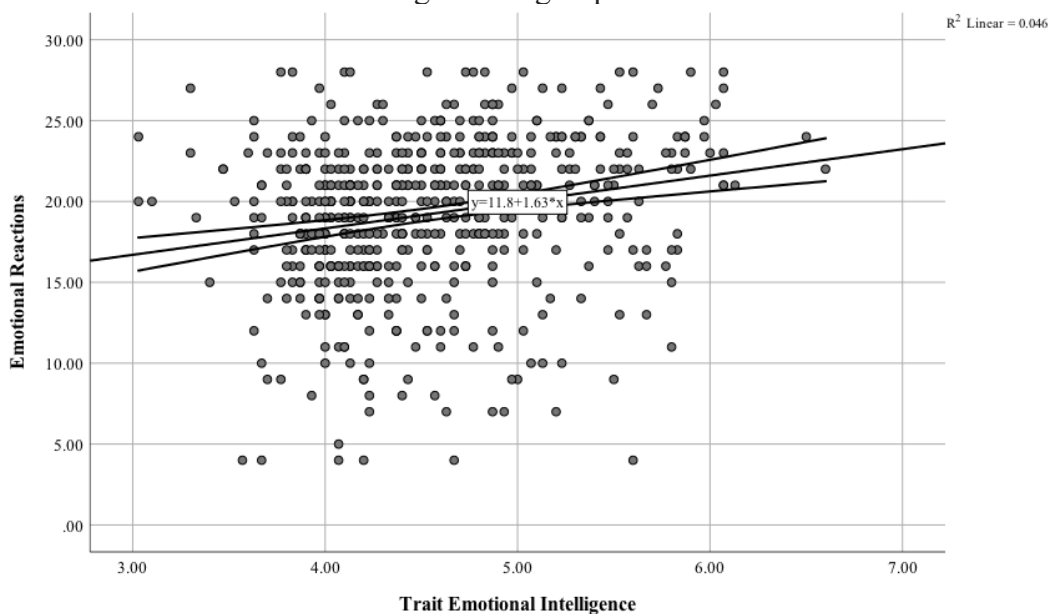
3.5% of variance. Weaker predictors included frequency of English use ( $\beta = .172, t = 3.36, p < .001$ , 1.9% of variance), English proficiency ( $\beta = .126, t = 3.30, p < .001$ , 1.4% of variance), nationality (Greeks) ( $\beta = -.106, t = -2.71, p < .007$ , 1.0% of variance), gender (women) ( $\beta = .116, t = 3.09, p < .002$ , 1.0% of variance), and education level ( $\beta = .081, t = 2.12, p < .034$ , explaining a final 0.6% of variance). A scatterplot with a regression line shows that the more LX users watch English language television, the higher their self-reported Emotional Reactions scores in English LX are (see Figure 4).

**FIGURE 4.** Scatterplot with regression line and 95% confidence interval for frequency of watching television in English and Emotional Reactions in the English LX group



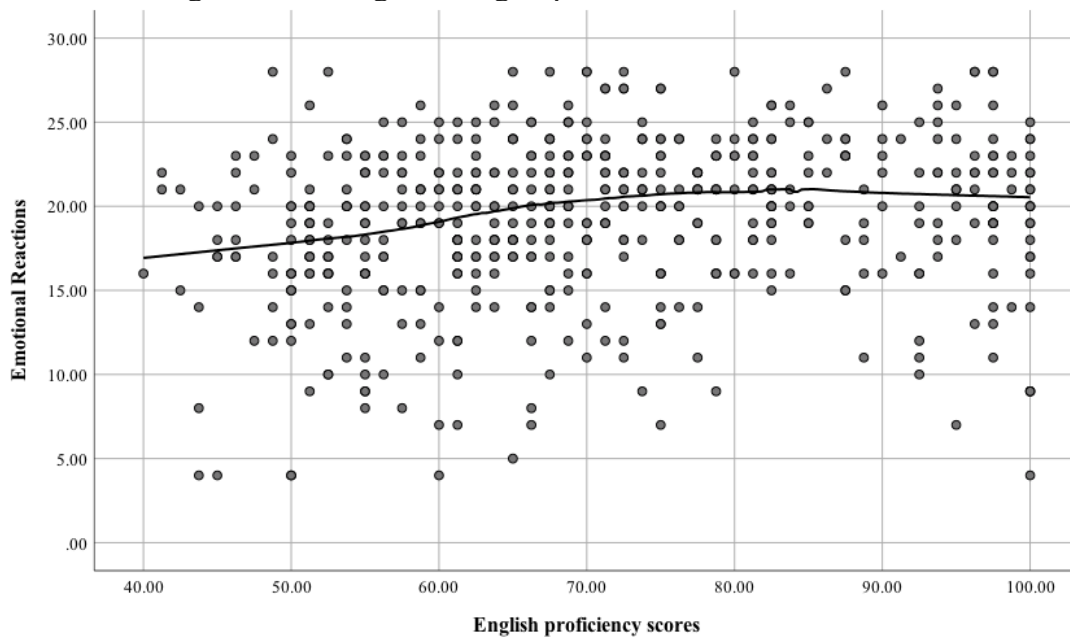
A scatterplot with a regression line shows that LX users with higher levels of Trait EI have higher self-reported Emotional Reactions scores in English LX (see Figure 5).

**FIGURE 5.** Scatterplot with regression line and 95% confidence interval for Trait EI and Emotional Reactions in the English LX group



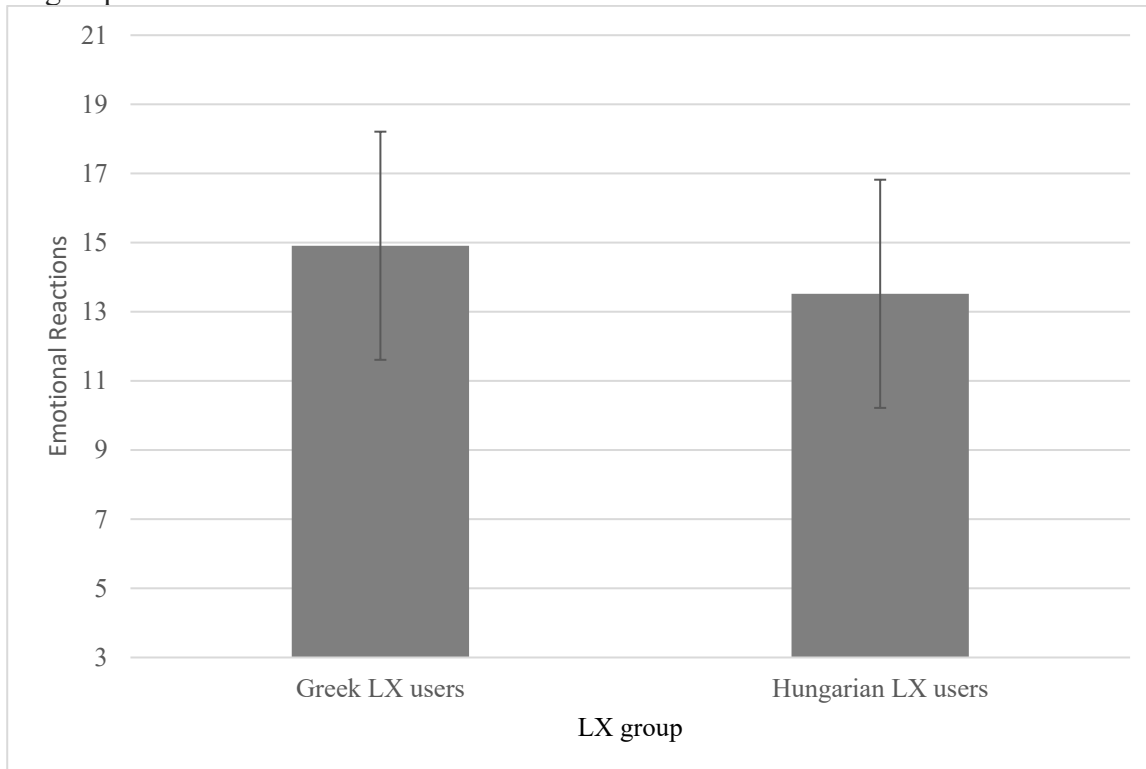
Considering the surprisingly low amount of variance explained by English proficiency, we visualised the relationship in a scatterplot with a LOESS line (locally weighted smoothing line; see Figure 6). It transpires that the relationship is not linear: there is an increasingly weak positive relationship between both variables up to a score of 80 (C1 level), followed by a flat line and even a slight decline. This suggests that self-reported Emotional Reactions in the LX grows with proficiency until the user has reached an advanced user level of proficiency, after which higher proficiency is no longer reflected in higher self-reported Emotional Reactions.

**FIGURE 6.** Scatterplot with LOESS regression line for English proficiency and Emotional Reactions in English in the English LX group



The third and final research question focused on the differences within the group of LX users and the difference between the Greek and Hungarian LX users on the one hand, and the English L1 users on the other hand. The multiple regression analysis on the whole group of LX users reported above revealed that nationality was a significant predictor in self-reported Emotional Reactions, explaining 1% of variance. In other words, the English LX user group is not homogeneous. To investigate this further, we ran an independent two-tailed samples t-test. It revealed that the Greek LX users had a significantly higher score on self-reported Emotional Reactions than the Hungarian LX users (Mean difference = 1.39,  $t(551.91) = 4.84$ ,  $p < .0001$ , Cohen's  $d = .41$  - a small effect size). The results are visualised in Figure 7. Two further independent t-tests between each LX user group and the L1 user group showed that the Greek LX users did not differ significantly from the English L1 users (Mean difference = .22;  $t(555) = -.83$ ,  $p = .40$ , Cohen's  $d = .07$ ), but that the Hungarian LX users did (Mean difference = 1.61,  $t(551.91) = -4.84$ ,  $p < .0001$ , Cohen's  $d = .47$  - a small effect size).

**FIGURE 7.** Means (and SD) for Emotional Reactions in English by the Greek and Hungarian LX groups



## DISCUSSION

The answer to the first research question on the differences between self-reported Emotional Reactions of English L1 and English LX users is positive, as English L1 users had significantly higher scores for self-reported Emotional Reactions in English compared to English LX users when reflecting on their past viewing of television news and films in English. This finding, which represents a very small effect size, confirms earlier research on LX users reporting lower emotionality in the LX compared to the L1 in generic activities such as swearing, declaring love, lying, expressing feelings to a loved one or reacting physically to high arousal words or sentences (Dewaele, 2013). Thinking about past emotional experiences does not seem to trigger the compensation mechanism for a lack of emotional resonance of the LX (Dewaele & Moxsom-Turnbull, 2019). Table 1 presents an overview of the quantitative studies that were reviewed earlier according to whether a difference in emotionality between the L1 and LX was found or not and in what direction the difference went<sup>4</sup>. A majority of studies (15 out of 26) did report lower emotionality in the LX.

Table 1. Overview of studies, including the present one, that investigated emotionality of L1 versus LX

Study	Direction of the difference	Key results
Opitz & Degner (2012)	No difference	$p = ns$
Conrad et al. (2011)	No difference	$p = ns$
Caldwell-Harris et al. (2011)	Mixed	Rating of reprimands overall $p < .001$ , $d = .474$ , $> L1$ ( $p < .001$ ), taboo $> LX$ ( $p < .02$ ); SCRs $p < .05$ , $d = .202$
Harris (2004)	Mixed	reprimands late LX: $p < .05$
Resnik (2018)	Mixed	L1/LX, $p = ns$ , L1: $p < .001$
Ivaz et al. (2019)	Mixed	Language effect: $p = ns$ , emotion & pupil dilation: $p < .05$ , $\beta = -.04$ , ratings: $p = ns$
Baumeister et al. (2017)	Mixed	SCRs: $p < .04$ , $d = .68$ , categorization: $p = ns$ , retrieval in L1: $p < .04$ , $d = .038$ , in L2: $p = ns$
Jankowiak & Korpala (2018)	Mixed	SCRs: $p < .001$ , $r = .579$ ; self-reported emotions (PANAS) $p = ns$
Present study	More in L1	$p < .001$ , $d = .276$
Caldwell-Harris & Ayçiçeği-Dinn (2009)	More in L1	ratings & SCRs ( $p < .001$ & $.01$ )
Ożańska-Ponikwia (2019)	More in L1	
Chen & Dewaele (2019)	More in L1	$p < .001$ , $R^2 = .226$
Dewaele (2004)	More in L1	$p < .001$ , $R^2 = .121$
Dewaele (2010)	More in L1	$p < .001$ , $R^2 = .218$
Dewaele (2011)	More in L1	$p < .001$ , Z ranging from -3 to -12.
Dewaele (2013)	More in L1	$p < .001$ , $R^2 = .012$ to $R^2 = .313$
Dewaele (2017)	More in L1	$p < .001$ , $R^2 = .103$
Harris et al. (2003)	More in L1	$p < .005$ , $d = .16$
Iacozza et al. (2017)	More in L1	L1: $\beta = 0.31$ ; LX: $\beta = 0.14$
Toivo & Scheepers (2019)	More in L1	L1xWordType: $p < .05$
Cook (2019)	More in L1	Qualitative support for LX detachment
Marcos (1976)	More in L1	Qualitative support for LX detachment
Rolland et al. (2017)	More in L1	Qualitative support for LX detachment
Dewaele (2016)	Less in L1	$p < .05$ to $.0001$
Dewaele & Moxsom-Turnbull (2019)	Less in L1	$p < .0001$ , $d = .38$
Mavrou & Dewaele (2020)	Less in L1	$p = .037$ , partial $\eta^2 = .025$

The lower self-reported Emotional Reactions values of our LX users are not surprising as they were not residing in an English-speaking country, and LX acculturation and socialisation were powered through a more passive media exposure to English. Television turns out to be a powerful medium through which viewers absorb emotional input in a wide range of programmes, presented by a wide variety of people. Connecting verbal, vocal and visual input allows LX users to develop an ability to gauge emotionality and it can ultimately boost sociopragmatic knowledge on the communication and perception of emotions (cf. Brown, Iwasaki & Lee, 2016).

The second research question focused on the relation between sociobiographical, linguistic and psychological variables and self-reported Emotional Reactions in English among English L1 users. None of these variables were found to be significant predictors of self-reported Emotional Reactions. This absence of effect is undoubtedly due to the fact that L1 users are fully socialised in British English and so saturated with the language that more or less exposure to television news and films – possibly also in American English – made no difference. The absence of any sociopragmatic deficit meant that there was no need to mobilise their Trait EI to overcome the gap (Dewaele, Lorette, & Petrides, 2019).

The third research question focused on the predictors of self-reported Emotional Reactions in the LX group. In marked contrast with the L1 user group, all independent variables included in the multiple regression analysis were significant predictors of variance (a small-to-medium effect size).

Exposure to television in English accounted for over half of the explained variance (i.e. 17%) with Trait EI adding a further 3.5% of variance. This fits with the findings in Dewaele et al. (2019) that Trait EI can make a difference if the user struggles with a linguistic deficit. A higher level of Trait EI allows better processing of emotional patterns, including vocal and visual cues, in the English television news and films that differ from those in their L1. Frequency of English use and English proficiency explained a further 3% of variance. This suggests that despite the relationship between both variables, they each explain unique variance. The surprising finding that active use of English and English proficiency had a weaker effect on self-reported Emotional Reactions than passive exposure to English (i.e. watching television) might suggest that silent observation of television news and films provide LX users with a better opportunity to pick up and compute the subtle cues of emotion through specific word choice, pitch, volume, intonation, facial expression and gesturing. It is also possible that our LX participants did not use English in emotional domains, whereas the audiovisual materials they viewed elicited emotional responses. The weak effect of proficiency could also be attributed to the non-linear relationship, as seen in Figure 6. Proficiency has a weak positive effect at the lower end of the continuum but this relationship weakens and then disappears around a score of 80, suggesting that on reaching the advanced user threshold in English, growing linguistic proficiency becomes independent from self-reported Emotional Reactions. Nationality, gender and education explained a final 2.6% of the variance. The finding that gender and education had a very small effect confirms previous literature (Dewaele, 2013).

Differences between the two LX groups were the focus of the final research question. The Greek LX users scored significantly higher on self-reported Emotional Reactions than the Hungarians. Comparisons between the two LX groups and the English L1 group showed that there was no equidistance at all: the scores of the Greek LX users were non-significantly different from those in the English L1 group but the Hungarian LX users were significantly different. Proficiency cannot be the cause of the difference since both LX groups had similar levels. A similar finding emerged in Dewaele (2011) where multilinguals who reported to be maximally proficient in their L1 and LX still preferred the L1 for emotions. The higher values of the Greeks' Emotional Reactions might be linked to their higher levels of Trait EI and/or their more intense use and exposure to English through education (Dendrinos et al., 2013). Moreover, watching English films and television in the original version (Masoura & Gathercole, 2005) on Greek television channels may have boosted Greeks' English pragmatic skills and the language's emotional resonance. The implication of this finding is that the implicit assumption in all previous studies using participants with the same L1 and LX that the differences are universal is incorrect<sup>5</sup>. Had the current design included only one single group of English LX users, the results would have been very different: a significant difference between L1 and LX users if the latter had only been our Hungarian participants, and a null result if the LX users had only been our Greek participants. In other words, the LX detachment effect depends on participants' linguistic profile, which is shaped by the availability of the LX in the society in which they grew up.

The present study is not without limitations. Firstly, the quota sampling in three different countries resulted in samples with slightly different sociobiographical profiles, with the LX user group being slightly younger and more highly educated than the L1 user group. However, age turned out to have no effect, and education level had a limited effect in the LX group only. Moreover, the higher level of education of the LX group is unavoidable, given that Greeks and Hungarians can only learn English to a fairly high level through formal education, in contrast to the British participants. The advantage of the quota sampling was firstly that it allowed access to participants who did not belong to a typical homogeneous student population and, secondly, that there was no problem with self-selection bias. The second limitation is that we cannot exclude a culture effect rather than a language effect in the item about trusting a television news report in English. Finally, the Likert scale used to collect data about the frequency of feeling emotional included labels such as "always", indicating that respondents should consider the proportion of times they felt emotional relative to all the times they watched English films/news reports. We acknowledge that more frequent exposure almost inevitably results in more frequent emotional reactions in an absolute

sense. Experimental research is needed with L1 and LX users being presented with fragments of emotional audiovisual materials where both their physiological and meta-cognitive reactions could be collected (cf. Toivo, 2020). Further research could also explore whether the self-reported Emotional Reactions of English LX users who settle down in an English-speaking environment continue to be predicted by the variables that were identified in the present study. Finally, although some researchers have questioned the reliability of self-report measures (cf. Jankowiak & Korpala, 2018), we argue that they constitute a vital tool in catching elusive emotional reactions in the lives of multilinguals (cf. Dewaele, 2013; Pavlenko, 2005) and that they are not likely to suffer from social bias as higher scores on the items for Emotional Reactions in the present study are not socially more (nor less) desirable. In other words, there was no reason for the anonymous participants to “fake good” because the responses fell outside the “good-bad” continuum.

## CONCLUSION

The present study found that English L1 users had significantly higher values for self-reported Emotional Reactions than English LX users –though the effect size is very small- which confirms a majority of previous research (Dewaele, 2013; Pavlenko, 2012; Toivo & Scheepers, 2019).

None of the variables predicted self-reported Emotional Reactions in the group of L1 users, which was interpreted as evidence that little variation exists among L1 users who are fully socialised and immersed in their language and culture. In contrast, the sociobiographical, linguistic and psychological variables predicted 25% of variance in the self-reported Emotional Reactions of the LX user group. Watching television in English was the strongest predictor, followed by Trait EI, frequency of English use, English proficiency, nationality, gender and education. A closer look at the Emotional Reactions of the Greek and Hungarian English LX users revealed significant differences between both groups, with the Greeks having higher values that were non-significantly different from those of the English L1 users.

It thus seems that passive exposure to an LX through television has a stronger effect on self-reported Emotional Reactions of LX users residing outside the countries where that language is used than active use of the LX.

To conclude, a note of caution is warranted to researchers comparing Emotional Reactions of English LX users that share the same L1 with a control group of English L1 users. It is crucial to avoid the assumption that a group of LX users with a similar language profile represent **all** LX users. We thus encourage investigators to develop research designs that allow them to tease out the effect of the LX users’ L1.

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<sup>1</sup> Trait Emotional Intelligence is a lower-order personality trait that comprises a constellation of emotional perceptions and emotional abilities (Petrides, 2017).

<sup>2</sup> One participant did not disclose his/her gender.

<sup>3</sup> Plonsky and Oswald (2014) suggest the following interpretation of Cohen's  $d$  values: “in the neighborhood of .40 should be considered small, .70 medium, and 1.00 large” (p. 889).

<sup>4</sup> Only the key available statistical information that is relevant to the present study was included.

<sup>5</sup> In contrast to the multilingualism studies based purely on self-report that had samples with a wide range of L1s and LXs (cf. Dewaele, 2013).