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The Impact of Day-to-Day Use of Multimedia by L2 Learners of English on the Comprehension of Regional Varieties

Kizzi Edensor-Costille♦

Traditionally, the teaching of British English in SLA has been centred around Received Pronunciation (RP), with learners of English rarely exposed to other accents. It was generally assumed that L2 learners understand the standard accent more easily than other regional, ethnic or even international accents. The first studies to test the intelligibility of the RP accent were carried out in the early 2000s.

Several linguists have questioned the status of RP as a model in L2 learning and the changes it has undergone that are not always reflected in teaching, while others have commented on the difficulty for L2 learners to comprehend or acquire RP (Abercrombie, 1956; Wells, 1982; Foulkes and Docherty, 1999; Jenkins, 2000). Wells (1982) suggests that learners use certain features from other varieties, deemed easier to pronounce (e.g., use of /l/ vocalization, instead of dark L). Other linguists have suggested using another accent as a reference model (Abercrombie, 1956) or to simply focus on features essential for intelligibility as presented in the *lingua franca core* (Jenkins, 2000). Some examples of the latter are the simplification of consonant clusters, vowel length distinctions and focusing on nuclear stress (Jenkins, 2000).

Attitudes towards regional varieties have also been progressively changing, be it towards regional accents in the UK—with increasing acceptance of non-RP speakers in the media—or a general shift towards the acquiescence of other accents of English by universities (Glain, 2020). For example, in France, more and

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more universities offer syllabi on regional accents, and it is no longer an absolute prerequisite for French learners of English to aim for an RP accent (Rapport de jury CAPES; Mioche 2015).

The boom of the Internet and consequential digital media usage (Reyna et al., 2018) has completely transformed the way we teach and learn English. Nowadays, listening to English, and even speaking or writing it, is only a click away, but has this transformation impacted L2 acquisition?

For native listeners, linguistic variation due to regional accents is perceived and generally understood in everyday language situations but what happens when the listener is a non-native? Can they deal with the variation and understand regional varieties? Has increased input from day-to-day use of multimedia improved the ability of French learners of English to process and comprehend English accents?

Perception and Comprehension

Learning how variation in speech is perceived and comprehended is necessary to understand the process of learners' perception of L2 speech. The way listeners deal with less familiar accents can provide a more general understanding of perception as a cognitive process.

Several studies have examined how L2 learners adapt to certain sources of variability, but for many years, research on non-natives' speech perception focused on the perception of their accent by natives. Bradlow and Pisoni (1998) found that L2 listeners were not more susceptible to speaker variability effects than L1 listeners and that L2 listeners even performed better than native listeners on intelligibility tasks involving L2 speech. However, L2 learners may encounter difficulties when confronted with strongly accented speech (Bent and Bradlow, 2003) which can be less intelligible than speech from one's own dialect or accent group. These researchers claim that listeners who have the same native language all have the same "interlanguage" (Bent and Bradlow, 2003:1600) in an L2 and because of their specific interlanguage, they may find certain features of speech or accent, more (or less) intelligible than other listeners with a different native language. In terms of speech intelligibility, the listener-speaker relationship must be taken into consideration.

Comprehending and Processing Accented Speech

One of the first studies to evaluate the intelligibility of RP asked listeners from Singapore and Britain to orthographically transcribe English spoken by a near RP speaker and a Singaporean speaker (Fraser Gupta, 2005). The results confirmed that it is easier to cope with a familiar accent. However, comprehending an unfamiliar accent led to mixed results, some listeners being more skilled than others.

Another study examined the comprehension of 3 accents: Cambridge, Cardiff and Belfast from the IViE corpus (Intonational Variation in English), by 3 groups of listeners (Ikeno and Hanson, 2007). The first group was a mixed group of L2s with various L1s (Chinese, Croatian, German, and Japanese), the other 2 groups were native speakers: 1 British group and 1 American. It was concluded that overall transcription accuracy is affected by the listeners' nativeness to the language. The L2 listeners correctly transcribed 48% of what they heard, compared to 78% for the British group and 82% by the Americans. The Cardiff accent was the most comprehensible for the L2 group (58%), followed by the Cambridge accent (44%) whereas the other 2 groups understood over 80% of the Cambridge and Cardiff accents. In 2010, Edensor showed similar results (cf. §2.3 Results for full discussion). A recent study that tested 12 native Chinese listeners on speech-in-noise recognition of 13 different accents (Pinet et al., 2019) concluded that the standard accents (RP and General American) were the most intelligible.

Floccia et al. (2006) suggest that it is familiarity with a regional accent that determines sentence processing, not specific accent features. The notion of familiarity is often evoked when processing non-native speech.

Research on L2 accent adaptation indicates that processing costs should eventually decrease after exposure to the accent has been sufficient to allow for complete adaptation (Munro and Derwing, 1995; Clarke and Garrett, 2004). There is normally a processing cost in spoken word recognition, but it is possible to adapt after several sentences. Adaptation results from the combination of a two-stage normalization process: first, comprehension is disrupted while listeners adjust to local parameters, then adaptation takes place. However, full accent adaptation is not always ensured. Dupoux and Green (1997) also suggest that adaptation (to compressed speech) results from the combined action of two mechanisms. First, a short-term adjustment to local speech parameters, followed by a long-term learning process where phonological and lexical information are encoded. According to these authors, this kind of mechanism also allows adaptation to a regional or foreign accent.

Clarke and Garret (2004) argue that accents can be ranked on a perceptual scale according to their acoustic distance from the native language. Non-native accents are at one end, standard accents are at the other, and regional accents are somewhere in the middle. This implies that the same processes are used for both accented and non-accented speech and the extent of accent-related processing effects simply reflect the accents' distance from the native language or accent of the listener. Other research has reached similar conclusions observing that when the listener hears speech which is considerably different from their own category prototypes, the listener must work harder to decode the message and therefore it may take longer (Evans and Iverson, 2004; Larraza and Best, 2018; Munro and Derwing, 1995).

Bond (2005) explains that misperceptions or 'slips of the ear' (Bond, 2005: 298) between natives of different dialects, or when listening to an L2 accent, are often due to connected speech phenomena such as word boundaries, elision or assimilation. She states that slips of the ear can take 2 forms: the listeners perceive the phonetic detail correctly but retrieve something other than the original utterance or listeners compensate incorrectly or over-compensate because of the speaker's accent characteristics.

Understanding the stream of speech can be problematic for L2 learners, whatever the accent. The actual technique of learning to listen (and comprehend) natural speech is not always taught in SLA. As teachers, we must be conscious of our own speech or at least, how we modify it when teaching, be it by toning down an accent or reducing our speaking rate. Recent work on the speech stream by (Cauldwell, 2013) gives the metaphor of greenhouse, garden and jungle to describe the different types of speech. The greenhouse and garden are said to be careful speech models, the first is mainly made up of citation forms, the latter, is governed by connected speech rules whereas the jungle is spontaneous, messy and unpredictable. Teacherese or teacher talk (Håkansson, 1987), greenhouse or garden (Cauldwell, 2013) simply do not reflect everyday speech. They can seem necessary at the beginning of acquisition but, in the long run, do not help learners decipher the message in the stream of speech.

Most linguists concur that when it comes to an unfamiliar accent, we are dealing with degrees of skill of the listener, with some listeners being simply more capable than others of mapping unfamiliar varieties onto their phonology in order to comprehend the intended message. According to Rost (1990:129), 'the listener does not receive meaning, but rather constructs meaning'. The listener must deal with new and old information and update their cognitive representation as the speaker talks, even if their understanding is flawed or incomplete.

Digital Media and the Internet: Learning Through Multimedia

In an article from 2009, Mayor cites the findings of Pérez Basanta (2000) who noted that 'most Spanish students are hardly exposed to the oral form of English in or outside the classroom, which would account for their poor listening proficiency' (Mayor, 2009:110). A parallel may be drawn between this situation and the one in France. Over the last decade, major technological changes and affordable access to computers, smartphones and tablets have changed the way we communicate, socialise and also learn. Nowadays, just with a smartphone, it is possible to stream or make videos, watch films, connect to online classes—basically, to communicate with anyone, anywhere. In 2014, Robertson found that

300 hours of video were uploaded to YouTube every minute (Robertson, 2014 cited in Reyna et al., 2018).

This digital revolution has had a global and consequential effect on L2 learning, with the type and amount of varied input learners get inside but also outside the classroom only a click away. Major advances in speech technology have led to the increasing use of language software and technology, such as computer assisted language learning (CALL) and computer-assisted pronunciation training (CAPT). Several studies have shown that using multimedia contributes to the learners' comprehension of acoustic input and has the added benefit of presenting authentic speech (King, 2002; Chung, 2017; Fouz-González, 2015).

In the same way that researchers in speech perception argue that increased exposure to different types of speech variation improves processing, many specialists in SLA believe that input is key and that wide exposure to the L2 can impact the level of acquisition (Ellis, 1994; Krashen, 1985; Flege, 2009). Bongaerts (1999) confirms that L2 Dutch learners of English became highly proficient when 3 factors were combined: "high motivation, continued access to massive L2 input, and intensive training in the perception and production of L2 speech sounds" (Bongaerts, 1999:155). Researchers, such as Cutler (2000) suggest that using intensive listening training to decrease the influence of the L1 on L2 processing is beneficial to L2 learners.

It could be said that continuously listening to L2 input, even without careful listening, is a type of ubiquitous learning. One meaningful definition is given by Bruce:

> Learning occurs not just in classrooms, but in the home, the workplace, the playground, the library, museum, and nature center, and in our daily interactions with others. Moreover, learning becomes part of doing; we don't learn in order to live more fully, but rather learn as we live to the fullest. Learning is through active engagement, and significantly, is no longer identified with reading a text or listening to lectures, but rather occurs through all the senses […]. (Bruce, 2008:583)

With the rise of available input, we believe that ubiquitous learning is becoming a common phenomenon, i.e., L2 learners increase their familiarity and experience of a language simply by listening to different types of speech and variation. Scandinavian populations, who have been watching undubbed television for decades and are generally proficient in both speaking and comprehending English can be seen as a good example of ubiquitous learning. This type of unconscious learning corresponds to what teachers and researchers advocate—input (listening) is essential, and especially effective in reducing the influence of the L1 on L2 processing. Thanks to the Internet, resources are abundant, varied

and readily available. Multimedia resources provide a never-ending source of authentic English where it is possible to hone into linguistic and paralinguistic features. They offer the possibility of learning differently in the classroom but also, and maybe most importantly, outside the classroom. Nowadays, any learner can turn on the TV or computer and hear English. The soar in available multimedia could be said to have democratized language learning, positively affecting all aspects of L2 learning. The question remains to determine if it has improved their comprehension of English regional accents. Are French learners of English better equipped to deal with variation in speech? Does day-to-day use of multimedia in English impact their comprehension?

The Initial Study (2009)

The main aim of the experiment was to evaluate L2 learners' comprehension of 9 regional accents.

Stimuli and Procedure

The read passage of the Cinderella story from the IViE corpus was used for this experiment. The accents are Cambridge (near RP), London (Jamaican bilinguals), Liverpool (S), Leeds (L), Bradford (Punjabi bilinguals), Cardiff (Welsh bilinguals), Newcastle (N), Belfast (B) and Malahide (Dublin). The passage was segmented into short (4-9 syllables), medium (10-14 syllables) and long utterances (15-24 syllables). The initials of each accent (in bold) correspond to the abbreviations indicated in the IViE corpus and in the graphs below.

Prior to this experiment, a study was conducted to identify the most characteristic speaker from each variety. This enabled us to select 1 speaker per accent. Then, 3 sentences were selected for each accent, attempting to include the most inherent features. For example, the use of [x] instead of /k/ in the Liverpool accent, /t/ and /d/ instead of /θ/ and /ð/ in the Dublin variety, L-vocalisation in the London accent, etc (see Wells (1982), volume II, for a full account of accents from the British Isles). The main aim of the experiment was to determine how these typical regional pronunciations impacted comprehension, we therefore tried to include as many as possible in the sentences selected. We also tried to choose relatively frequent words (again, within the lexicon of Cinderella's story). Here are a few examples of the sentences in the experiment:

C: But he held on to the slipper.
J: The glass slipper was his only clue.
N: 'Oh dear!' she sighed.
L: But the slipper was always too small.
W: It was her fairy godmother!

Once the sentences had been chosen, the volume of the recordings was harmonised to 60-75 decibels.

Each participant completed a questionnaire giving information on their general background, and their habits and uses of English. 3 factors were established as having a possible positive impact on comprehension: the amount of time spent in an Anglophone country, the number of years spent studying English and the frequency of watching media in English (possible answers were: *rarely*, *sometimes*, *often*, and *systematically*). Regarding input, the questions focused on how often they watched films or series in English. Participants were not asked to quantify the number of hours per week because in 2009, media was not readily available in English, and was mostly dubbed in French.

Lancelot, in the Perceval Package (a Computer-Driven System for Experimentation on Auditory and Visual Perception) was used for this experiment as it enables participants to progress at their own pace. The subjects were asked to orthographically transcribe 27 utterances (3 per accent) and could listen to each a maximum of four times. The listeners never heard the same speaker or accent consecutively and none reported having hearing impairments.

Participants

2 groups participated in this experiment. The first (Grp1_09), is made up of 19 undergraduates enrolled in a BA of English. Their average age was 20 years old and they had studied English for 9.1 years (average). 1 out of 2 had spent at least a week in an English-speaking country and the average length of stay was 3 months. Almost all said they watched films in English 'sometimes'. This group was not familiar with any of the regional accents.

The second (Grp2_09), composed of 6 graduates whose average age was 26.6 years old and who had studied English for 12.8 years (average). All participants had spent time in an English-speaking country, they therefore had slightly more experience with some regional accents. The average length of stay was 5.2 months. 4 out of 6 watched films in English 'systematically'.

Results

Following guidelines set out in previous studies (Fraser Gupta, 2005; Ikeno and Hansen, 2007), the number of correctly transcribed words was counted, giving a total out of 260 words. There was no penalty for the insertion of words nor for spelling mistakes, compounds and contractions were classified as two words.

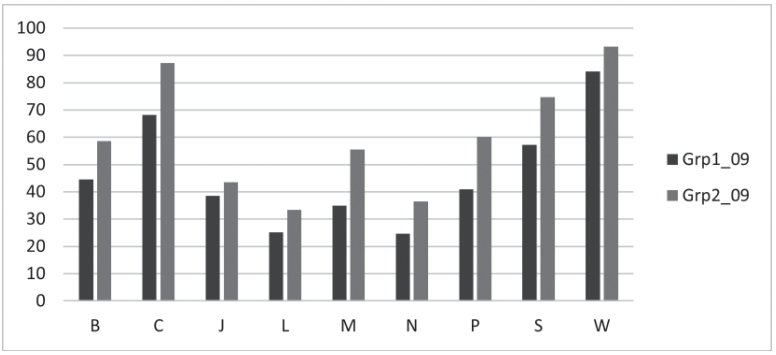


Figure 1: Percentage of words correctly transcribed in 2009 by Grp1_09 and Grp2_09

As can be seen in Figure 1, comprehension is heavily impeded by the variation in speech, but to different extents, depending on the accent. The overall percentage of comprehension is 46.74% for Grp1_09, and 60.90% for Grp2_09. This result indicates that experience (for example, through years of study) facilitates processing regional accents in an L2. Nevertheless, the comprehension levels are low in many accents, particularly for Grp1_09.

The results show that the number of correctly transcribed words is highest in the Cardiff (W) accent for both groups: Grp1_09 - 84.05% and Grp2_09 - 93.23% (difference between the 2 groups: 9.18 percentage points). For the Cambridge (C) accent, the difference between the 2 groups is higher (18.98 percentage points) and correct transcription for Grp1_09 is 68.25%, with Grp2_09 correctly transcribing more words: 87.22%. It was expected that the Cambridge accent be the most comprehended accent for 2 reasons; firstly, it is the variety that is phonologically closest to the RP accent, secondly, RP is the variety with which L2 learners in France are *a priori,* the most familiar. The Liverpool (S) accent was the third most comprehended accent by both groups: 57.26% (Grp1_09) and 74.67% (Grp2_09).

For the accents, London (J), Newcastle (N) and Leeds (L) the level of comprehension was inferior to 50%, in other words, all participants understood less than 1 out of 2 words. Newcastle and Leeds had the lowest scores in both groups: for Grp1_09: (N) - 24.67%; (L) - 25.09%, Grp2_09 did slightly better: (N) - 36.46%; (L) - 33.33%. For these 2 accents, comprehension is clearly impeded. Grp2_09 generally performed better than Grp1_09 because, except for J, N, and L, Grp2_09 correctly transcribed over 50% of the words in the other accents. This tendency suggests that the graduates—who studied for a longer period and had more experience with English in general—were better equipped to deal with variation than the undergraduates. For example, levels of comprehension were inferior to 50% in 6 out of 9 accents for Grp1_09, whereas for Grp2_09 only 3 out of 9 were comprehended less than 50%. For Grp1_09, 3 accents (in order: P, J, M) were understood 40% or less and their levels of comprehension fell below 30% when listening to the Leeds and Newcastle accents (L: 25.09 and N: 24.67).

Interestingly, the levels of intelligibility of both groups were the highest for the same 3 accents (W, C, S), and the lowest for the same 2 accents (L, N), leading us to think that both groups processed the accents in a similar way.

Now that levels of comprehension have been determined for each accent, we turn to the 3 factors established as potentially having a positive impact on comprehension: the amount of time spent in an Anglophone country, the number of years spent studying English and how often they watched media in English.

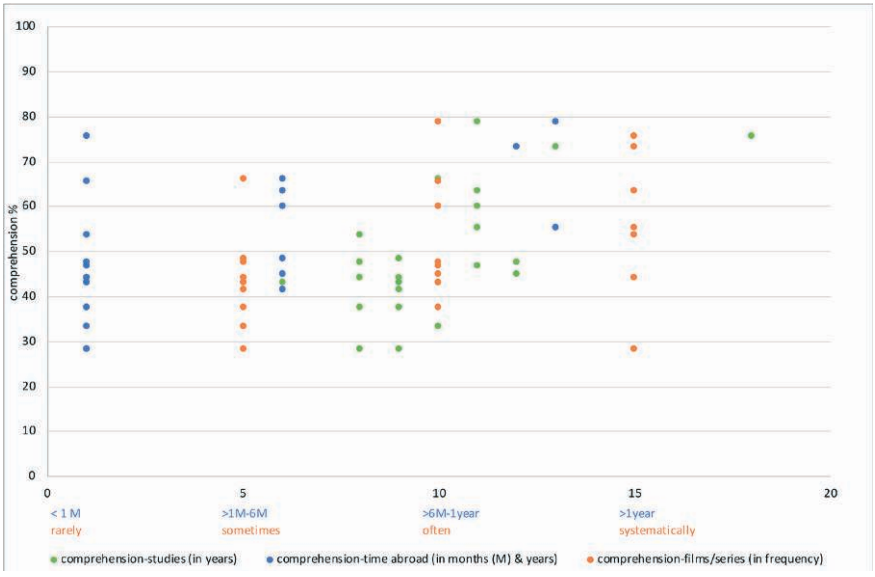


Figure 2: The impact of years of study, time abroad in an English-speaking country and frequency of watching films or series on the comprehension of regional accent by all the participants.

Figure 2 regroups the participants (Grp1_09 and Grp2_09) altogether in order to provide an overview of the impact of these factors on comprehension. The comprehension levels that may be explained by time spent abroad are shown in blue, in green are the number of years of study and in orange, the frequency of watching or listening to media in English. As can be seen, the results are quite dispersed, but seem to indicate a general tendency regarding their effect on comprehension. For example, the green dots (corresponding to number of years of study) show that comprehension is low (<50%) for most participants who studied for less than 10 years. However, comprehension levels start to increase for those who studied English for over 10 years. Time spent abroad has a slightly more positive effect on comprehension, but is duration-sensitive, signifying that most comprehension levels are 50% and above when the listener spent over a month in an Anglophone country. Multimedia input has a positive effect when done often to systematically, otherwise there is no effect.

This points to a homogeneous conclusion—the longer the amount of time spent doing any of these activities, the easier comprehension of regional accents is. In 2009, the task of comprehending regional English accents was difficult for French learners of English—especially for undergraduates. Students who have more experience; be it through the number of years spent studying English, the frequency of input through the means of multimedia or the length of time spent in an Anglophone country correctly transcribed more words. The participants were able to compensate for this variation more efficiently and retrieve the spoken message because they are more accustomed to dealing with the English language.

These results reveal the difficulties of French learners of English in comprehending regional variation in speech. However, a decade later, has comprehension improved? Is the level of understanding impacted by day-to-day use of multimedia?

The Present Study (2019)

In an age when many L2 learners get at least some of their input from TV series, films or YouTube videos, French natives are increasingly exposed to different English accents and types of speech. We therefore expect their familiarity and experience with regional accents to have increased, but can the same be said for their comprehension?

Material and Procedure

We propose replicating the same experiment to evaluate comprehension and to determine the impact of multimedia input in English on the comprehension of these 9 accents. 2 other factors (length of stay and years of studying) are also examined. Each participant could listen to each stimulus a maximum 4 times (in Lancelot). They orthographically transcribed the same 27 sentences taken from the IViE corpus, using the same speakers.

Prior to the experiment, each participant filled out a questionnaire about their background and English usage—more specifically, how frequently they listened to English via multimedia. The participants were asked to provide information about the number of hours per week spent listening to or watching multimedia. This included 3 sub-categories: watching TV series and films; viewing YouTube channels; interacting in English whilst playing video games or on social media, thus providing information about frequency but also hours per week for each specific activity.

To compare these results with the 2009 results, Figure 4 is presented using frequency (rarely, sometimes, often, systematically) of watching media in English. Once the results from both studies have been presented, we shall then

examine the number of hours spent on the different multimedia activities per sub-category, and their impact on comprehension in 2019. This will enable us to determine if, for example, interacting during video games/on social media has a greater effect on the comprehension of regional accents than viewing YouTube videos or watching films/series. In Figures 4 and 5, the participants (Grp1_19 and Grp2_19) are grouped together and considered as one population of L2 learners.

Participants

There are two groups of learners of English: one group of 12 French undergraduates (Grp.1_19) and a group of 8 French graduates (Grp2_19). None reported having hearing impairments.

The average age for Grp1_19 was 21.2 years old; they had, on average, studied English for 12.8 years. All had been to an English-speaking country (average 20.25 days). The questionnaire revealed that the average multimedia input in English per week was 29.02 hours. This corresponds to an average, per week, of 9 hours 15 minutes watching films/series in English, 3 hours 16 minutes on YouTube and 16 hours 30 minutes playing video games or on social media.

For Grp2_19, the average age and time spent studying was 25.3 years old and 13.2 years, respectively. All had been to an English-speaking country (average 5.75 months). On average for this group, multimedia input in English totalled 11 hours 17 minutes per week. The amount of time spent (on average, weekly) on each of the sub-categories was 5 hours 34 minutes watching films/series, 4 hours 38 minutes on YouTube and 1 hour 5 minutes on video games/social media.

Results

Grp1_19 correctly transcribed 61.70% of all words and Grp2_19 - 67.86%. Figure 3 shows that comprehension levels are accent-dependent i.e., there is much disparity between accents, some are easier to understand than others.

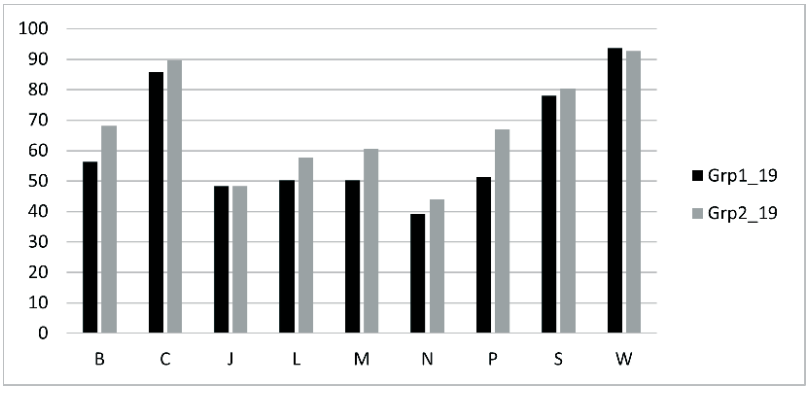


Figure 3: Percentage of words correctly transcribed in 2019 by Grp1_19 and Grp2_19

The Cardiff (W) accent was the best comprehended: in Grp1_19, 93.75% of the words were correctly transcribed, 92.71% in Grp2_19. The second best understood accent was Cambridge: Grp2_19 understood 89.63% and Grp1_19 (85.83%). The accent with the third highest comprehension score was Liverpool: Grp1_19 (78%) and Grp2_19 (80.44%). As can be seen in Figure 3, the 2 groups have similar comprehension levels.

Out of the 9 accents, only 2 (J and N) were understood less than 50%. When listening to the Newcastle accent Grp2_19 comprehended slightly more words (44.1%) than Grp1_19 (39.32), making it the least comprehensible.

The 9 accents are understood in exactly the same order: W, C, S, B, P, M, L, J, N, but Grp2_19 generally transcribed more words correctly than Grp1_19.

In Figure 4, the impact on comprehension of 3 factors can be seen. For this graph, the participants have been grouped together to determine possible tendencies.

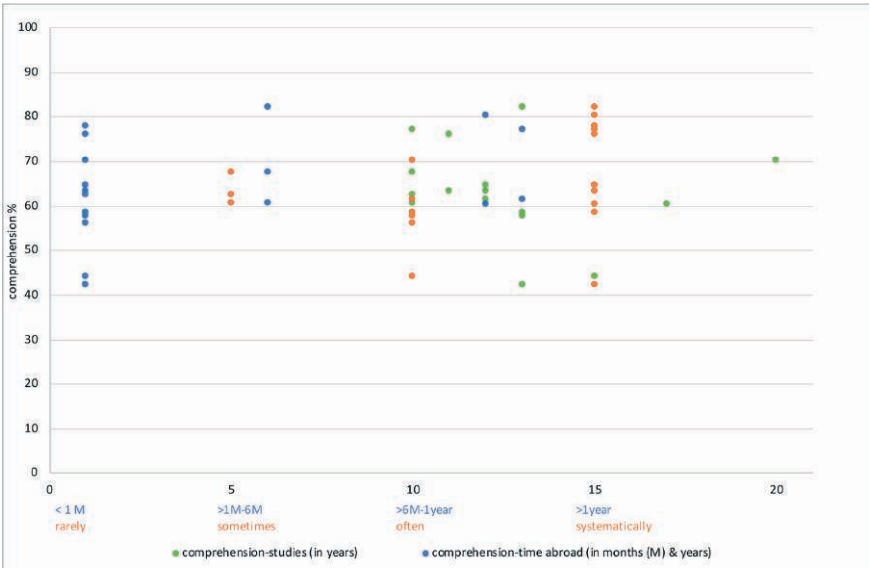


Figure 4: The impact of years of study, time abroad (English-speaking country) and frequency of watching films or series on the comprehension of regional accent by all the participants (Grp1_19 and Grp2_19).

It can be noted that the number of years spent studying (in green) has little effect on comprehension, i.e., those who studied for the longest did not systematically have higher comprehension. As for length of stay (in blue), the levels of comprehension of those who spent little time abroad (<1 month) and those who spent more than a month are comparable, signifying that this factor is not duration dependent. However, the last factor in this graph, in orange (frequency of input) has a positive effect but is duration dependent. Most participants who

watched 'sometimes' or more frequently, scored around 60% and comprehension levels rose to 75% and above for roughly half of the participants who watched 'systematically'. In 2009, participants generally had to watch media 'often' or 'systematically' to understand over 50% of the stimuli.

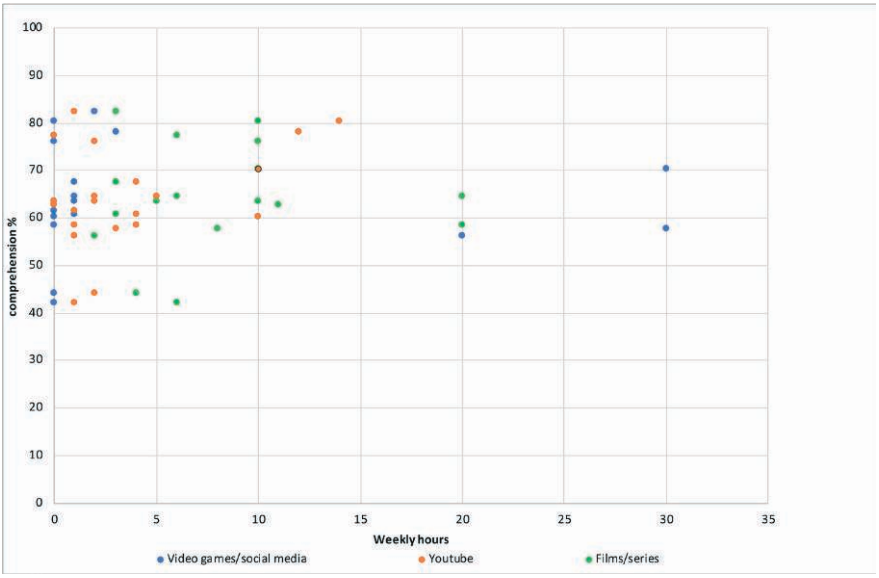


Figure 5: The impact of video games/social media, YouTube videos and films/TV series on the comprehension of regional accent by all the participants.

In Figure 5, the impact of the multimedia sub-categories on comprehension can be seen. These include the number of hours per week spent interacting on video games and social media (in blue), viewing YouTube videos (orange) and watching TV series or films (green). It indicates that watching films/TV series has the greatest impact on comprehension levels. Comprehension is 60% or more when participants watch, on average, 5 hours per week, rising up to 70% or more when listeners watch 10 hours a week—which seems like an ideal amount for maximum impact. It appears that most participants who watched at least 2.5 hours a week, comprehended 50% or more. Comprehension is less impacted by video games/social media input, i.e., there is not much difference between those who spent no time and those who spent 20+ hours. As for watching YouTube videos, the impact is small and may be duration dependent. It is possibly more difficult to determine a tendency because the participants spent less time doing these activities. Overall, there are more participants who spent time on the various activities and whose comprehension levels are above 60% than there are under 50%.

Discussion and Conclusion

The aim of this article is twofold: to assess non-native listeners' capacity to comprehend British and Irish accents, and to determine if multimedia input via the Internet, influences comprehension.

Two experiments were carried out on 4 groups of French learners of English. The first (2009), revealed that this type of variation in speech is difficult to process and understand. The overall percentage of comprehension was 46.74% for Grp1_09, and 60.90% for Grp2_09. The most successful were those who had studied the longest and watched media in English systematically. The general tendency indicates that of the 3 factors (length of stay in an English-speaking country, number of years of study and frequency of media input in English), years of study and media had the greatest impact, but were duration-sensitive i.e., comprehension increased proportionally with the amount of time. However, these results show that comprehension of regional accents was greatly impeded, especially for Grp1_09 who globally comprehended less than 1 out of 2 words.

In comparison, the levels of comprehension in 2019 had significantly improved: Grp1_19 understood 61.70% of the entire stimuli, 67.86% for Grp2_19. This indicates that out of the 2 groups, the most proficient group comprehended slightly better. This confirms the result found in 2009, albeit to a lesser extent, that the number of years spent studying impacts comprehension, thus suggesting that experience with a language (through years of study) can facilitate processing variation in speech in an L2.

We noted that watching films/TV series has an impact on comprehension and the other 2 factors (YouTube and video games) can be beneficial, but their impact is less systematic. One of the current questions in research is the impact of multisensorial input and the positive effect it can have on L2 learning. Our results seem to confirm that watching *and* listening to media impacts comprehension. Similarly, research on ubiquitous learning claims that we learn through all our senses, from everything around us, during work and play. These 2 concepts may partially explain our results on media. A simple explanation lies in multimedia availability, increased L2 input leads to a more experienced L2 learner and decreases L1 interference during L2 processing.

In both 2009 and 2019, the most comprehended accent (Cardiff) was not one the participants were familiar with prior to the experiment. This is consistent with previous results that used the same corpus (Ikeno and Hanson, 2007). The selected speaker had quite slow and careful speech which means there are less connected speech features, thus making it particularly clear and comprehensible. We noted that Bond (2005) found that most slips of the ear are due to connected speech phenomena causing listeners to compensate inaccurately, as we found especially in 2009. Most French listeners misperceived the same segments and words and proposed the same orthographic transcription. For example, *and her* was perceived as *under*. This persisted to a lesser degree in 2019 and the increased

amount of authentic English input in 2019 had multiple beneficial effects, one of which was the listeners' capability to correctly segment the stream of speech and comprehend weak forms. It remains clear that teachers must continue to focus on teaching the schwa in order to decrease this sort of comprehension difficulty.

Another reason could be linked to rhythm—the Welsh accent in English, just like the Welsh language, is said to be syllable-timed rather than stress-timed. For L2 learners whose L1 is also syllable-timed this similarity in rhythm may explain better comprehension. Research has shown that an L2 is processed in terms of category prototypes of the L1. (Clarke and Garret, 2004, Larraza and Best, 2018, Munro and Derwing, 1995), therefore making it easier for a listener to perceive and comprehend a language which is rhythmically closer to their L1.

The Cambridge accent (near RP) was well understood in both experiments. However, it was expected to be the most comprehensible, such as it is presented in the EFL literature. Moreover, this is the reference accent taught in French universities, making it the variety with which participants were thought to be the most familiar.

Out of the 9 accents, Liverpudlian was the third most understood variety by all participants. Many listeners correctly comprehended characteristic pronunciations from the Liverpool accent, such as *recognise* [ˈɾɛxənaɪz], thus showing that L2 learners can process certain elements of regional varieties. This is the second time in this discussion that the factor of familiarity, or lack thereof, has not accounted for comprehension levels of French learners of English. This result is in contrast with research on accent adaptation which often claims that listeners can process a familiar accent better than an unfamiliar one. For instance, when dealing with non-native speech, if the accent is unfamiliar, processing is more difficult and takes longer (processing cost). This highlights the fact that there is still much to be learned about how variation is processed.

As for the other accents, the results from 2009 showed that speech processing was incomplete, making it difficult to talk about comprehension, particularly with less experienced learners. It appears that the listeners did not understand very much and either missed out or guessed other words. This conclusion is consistent with previous research which indicates that some listeners are more skilled than others whereas some are unable to process this additional variation in speech. In 2019, comprehension levels increased and this impression no longer subsisted.

In 2009, there is a positive impact of watching media (systematically) on comprehension, but because of reduced availability, the effect is not significant. The effect of media on comprehension becomes clear in 2019 because global comprehension levels increased by 14.96 percentage points in Grp1_19 and by 6.96 percentage points for Grp2_19. One cannot help but wonder if watching specific TV shows where speech is predominantly spoken in regional accents (e.g., *Game of Thrones* and *Peaky Blinders*), can explain the improved understanding of certain accents in 2019.

Regarding our final results, out of the 3 sub-categories, watching films/TV series impacts comprehension levels the most, with many participants understanding over 60%. A possible explanation lies in the fact that in films or TV series input is more varied. Viewers choose for example, a theme, a period, even an actor (with or without automatically generated suggestions), but as there are normally several characters, the range of styles and accents is eclectic. This would confirm that varied input helps the listener cope with variation in speech. Those who watch on average 10 hours per week (roughly 5-6 films or 10-20 episodes from a TV series) are more likely to be exposed to various types of speech and therefore have more linguistic experience of the language. This is contrary to video games/social media and YouTube—where interaction often takes place either within the same group (video games/social media) or with the same (suggested) YouTubers. Another element to consider is although interaction via video games/social media can be spoken input, it is often written.

It is interesting to note that the participants processed the accents in a comparable way. In 2009, the levels of intelligibility were the highest for the same 3 accents (W, C, S), and the lowest for the same 2 (L, N). In 2019, the 9 accents are understood in the exact same order by both groups: W, C, S, B, P, M, L, J, N. In short, the first 3 accents are in the same (W, C, S) and Newcastle is always the least comprehensible.

There seems to be three levels of processing and comprehension:

In 2019:

- Comprehensible: Cardiff, Cambridge and Liverpool, Belfast;
- Comprehension with some difficulty: Bradford, Malahide and Leeds;
- Comprehension difficult to near impossible: London and Newcastle.

In 2009

- Comprehensible: Cardiff, Cambridge and Liverpool;
- Comprehension with some difficulty: Belfast, Bradford, Malahide and London;
- Comprehension difficult to near impossible: Newcastle and Leeds.

The identical order of comprehension in 2019 and similar order in 2009 suggests that these accents are being processed through the same mechanisms. This confirms several findings. First it confirms that participants listened through L1 ears. Second, that they all have the same interlanguage. The less proficient participants did not understand as much as Grp2 because their interlanguage is still perfectible. To test these results further it would be interesting to have other non-natives from a different L1 do the experiments. If the results differ, it would indicate that non-natives learners of English process and comprehend differently because they have a different interlanguage. Another possibility would be to replicate this experiment with one difference: the participants would hear the stimuli in a randomized order, to see if comprehension is identical a third time, despite hearing the utterances in a different order.

It is apparent that in 2009, regional accents are understood with difficulty and that there is significant improvement in 2019. Connected speech features are still difficult to understand in 2019, but to a lesser extent than in 2009. Through this study we have shown that increased input improves a learner's capacity to comprehend regional accents in an L2. We believe that this improvement is due to the large amount of input available via the Internet but also the fact that learners now get more input of authentic speech inside and outside the classroom. Watching or listening to multimedia in English has become second nature to many. This leads us to question the way we teach L2 learners to listen to authentic speech, to understand connected speech phenomena and also, how to use it in speech. Teacherese must be used less in classrooms if we want to improve the comprehension of connected speech features by L2 learners. This study has shown that in 2019, the number of years of studying had less impact on comprehension levels than in 2009. It seems clear that in 2009, the teacher was the main source of input for most students compared to nowadays where L2 learners get a large amount of their L2 input from multimedia. By varying our speech rate, or talking with our regional accents during class, it gives the students the opportunity to pinpoint aspects of speech that they didn't understand and gives teachers the opportunity to explain certain phenomena that will help listeners segment speech. The more L2 learners are exposed to variation—of any type, the better equipped they will be when dealing with speech outside the classroom, so let's venture into the jungle (Cauldwell, 2013) a little more often.

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