Concordia Working Papers in Applied Linguistics

Proceedings of the International Symposium on the Acquisition of Second Language Speech
Concordia Working Papers in Applied Linguistics, 5, 2014 © 2014 COPAL

Perceiving Intelligibility and Accentedness in Non-Native Speech: A Look at Proficiency Levels

Bettina Beinhoff
Anglia Ruskin University Cambridge

Abstract

This paper presents a study on how German and Spanish learners of English at different proficiency levels (as defined in the Common European Framework of Reference for Languages – CEFR) perceive accentedness and intelligibility of Spanish non-native accents in English. The study is based on rating tasks, structured interviews and transcriptions in response to short narratives, and aims to find out what kind of influence listeners' first language (L1) backgrounds (i.e. German and Spanish) and their levels of proficiency in the second language (L2; i.e. English) have on how accentedness and intelligibility are perceived. Results suggest that L2 proficiency levels and L1 background significantly influence how intelligibility and accentedness are rated. In addition, our results suggest that perceived intelligibility is influenced by factors such as familiarity with the relevant accent while actual comprehensibility seems to be less affected by this aspect.

The widespread use of English as a global language or lingua franca brings with it that the amount of English communication between non-native speakers (NNS) of English is constantly increasing. Many of these communicative interactions will necessarily happen between speakers with different levels of competence and from different first language (L1) backgrounds who speak English with very different accents. Most research on speech perception, however, has involved native speakers (NS) of English evaluating non-native English (e.g. more recently Kraut & Wulff, 2013; Lev-Ari & Keysar, 2010; van den Doel, 2006; and see Ludwig, 1982 and Eisenstein, 1983 for reviews of earlier studies) while relatively few studies focused on NNS-NNS interactions. Notable exceptions include studies on speech perception in adverse condition (see García Lecumberri, Cooke & Cutler, 2010 for a review) and studies conducted within the framework of English as a Lingua Franca (see e.g. Jenkins, 2006; and Pickering, 2006 for a review). The study presented in this paper addresses this issue by investigating how German and Spanish NNS of English perceive Spanish NNS English speech.

ACCENTEDNESS AND INTELLIGIBILITY IN A SECOND LANGUAGE

Accents are the main source of information about a speaker (especially in contexts without visual information, such as telephone conversations) and reveal not only the geographical origin, but also influence the perceived level of education, professional status, etc. For example, NNS accents have been shown to influence listeners' attitudes towards the speaker, where NNS accents with a distinct influence from the L1 sound system were perceived as less favourable on a number of traits as compared to NNS accents with only little L1 influence (see Beinhoff, 2013). In addition, for many speakers, an accent can be the only trace of "non-nativeness" in a language that has been acquired as a second language (L2) and in which they otherwise pass as NS (e.g. Piller, 2002).

In fact, one of the main concerns with accents is their intelligibility. While technically this is an issue for NS and NNS accents alike, the onus of "making oneself understood" seems to lie more on NNS, at least in the public perception. Research on intelligibility and accentedness in NNS accents has shown that accentedness ratings are usually harsher than intelligibility ratings (e.g. Munro, Derwing & Morton, 2006) and that features which contribute to a perceived NNS accent do not always influence comprehension (Ortega-Llebaria, 1997). Given that NNS accents

are influenced by both the L1 and the L2, the features influencing the perceived accentedness and intelligibility will vary accordingly.

Intelligibility and accentedness are thus widely recognised to be key issues in accent perception which has also been recognised in the Common European Framework of Reference for Languages (CEFR). Much of the proficiency level descriptions in this framework rely on the perceived intelligibility and accentedness of the NNS or language learner.

The Common European Framework of Reference for Languages (CEFR)

The Common European Framework of Reference for Languages (CEFR; Council of Europe, 2001) was introduced as a "common basis for the elaboration of […] curriculum guidelines […] across Europe" (Council of Europe, 2001, p. 1). Its central part is a description of proficiency levels of NNS' skills with the aim of facilitating comparisons in language teaching and assessment across Europe. In the CEFR, phonological competence is one of six communicative language competences (together with lexical, grammatical, semantic, orthographic and "orthoepic" competence)[1] which define a speaker's level of proficiency.

Current research on the CEFR, however, has a strong focus on discourse structure and lexis (see, for example, Evison, 2013; Green, 2010; McCarthy, 2010). So far, no studies have looked at the phonological level. Phonological development, however, is known to diverge from other competences and does not follow the same development rates (Flege & Bohn, 1989). This discrepancy, however, is not addressed in the CEFR proficiency level descriptions.

The CEFR could offer a framework for describing learner development as it divides the learning process into different stages through which learners progress. These stages could provide the unique opportunity to investigate learner and NNS performance in the L2 without necessarily having to rely on NS norms as a means of comparison. Reference to NS norms is unsuitable in many cases as for most NNS, native proficiency in an L2 or foreign language is unachievable. In addition, widely-used factors in NNS accent research, such as "length of residence" or "age of arrival" in the host country (cf. Piske, Mackay & Flege, 2001), are not always appropriate. In Europe, for example, the vast majority of learners

[1] "Orthoepic" competence is the ability "to produce a correct pronunciation from the written form" (Council of Europe, 2001, p. 117).

of English learn the language in their L1 environment and rarely visit English-speaking countries for extended periods of time. For many of them, English has the function of a lingua franca or foreign language, rather than an L2.

CEFR Proficiency Levels in Speech Production and Perception

The CEFR defines specific skills for specific levels of proficiency (A1 to C2). For example, the requirements for "phonological control" are as follows (see table 1):

Table 1. Requirements for phonological control (Council of Europe, 2001, p. 117).

	PHONOLOGICAL CONTROL
C2	As C1
C1	Can vary intonation and place sentence stress correctly in order to express finer shades of meaning.
B2	Has acquired a clear, natural, pronunciation and intonation.
B1	Pronunciation is clearly intelligible even if a foreign accent is sometimes evident and occasional mispronunciations occur.
A2	Pronunciation is generally clear enough to be understood despite a noticeable foreign accent, but conversational partners will need to ask for repetition from time to time.
A1	Pronunciation of a very limited repertoire of learnt words and phrases can be understood with some effort by native speakers used to dealing with speakers of his/her language group.

Note. The labels A1-C2 refer to the proficiency level of the learner, where A1 stands for beginner level, A2 for waystage or elementary, B1 for threshold or intermediate, B2 for upper intermediate, C1 for advanced and C2 for "mastery" level.

Accentedness and intelligibility are central issues of the proficiency level descriptions for phonological control, which deals with speech production only. This is evident throughout all levels, where level A1 is mainly concerned with intelligibility, in levels A2 and B1 both accentedness and intelligibility are key issues and levels B2 and C1 refer only to matters relating to accentedness. Thus, intelligibility is prioritised over accentedness, suggesting that language learners deal with intelligibility issues before they adjust their accent towards what is considered to be "natural" (level B2).

The above proficiency level descriptions for phonological control raise some other important issues, for example the strong focus on NS perception in level A1 and the complete lack of a C2 level description. While these issues are crucial and certainly in need of further discussion and clarification, they are not within the scope of this paper.

Interestingly, perceptive skills are not described as part of phonological control, nor are they described in any detail anywhere else in the CEFR, despite the important role perception is considered to have in developing productive skills. Widely discussed L2 speech acquisition models such as the Speech Learning Model (SLM; Flege, 1995) and the Native Language Magnet Theory (NLM; Kuhl, 1993) agree that perceiving a new sound is a necessary step in acquiring this sound on the productive level. In addition, evidence suggests that perception and production interact when new sounds and patterns are acquired (Lacabex, García Lecumberri & Cooke, 2008). Therefore, the L1 can be expected to influence L2-perception, though it is not certain how this influence would show in accentedness and intelligibility judgements. For example, Major et al. (2002) found that NNS find it easier to understand other NNS if they share the same L1 background whereas Kennedy and Trofimovich (2008) associated ease of intelligibility more with familiarity with the particular accent.

Speech perception is briefly mentioned in the CEFR as part of other skills; notably under "general phonetic awareness and skills" which combines production and perception (Council of Europe, 2001, 107). However, these perceptive skills are not linked to any specific proficiency level. More general issues of speech perception are part of the "listening comprehension" section, though much of this section refers to the content and register of speech and is otherwise rather vague.

The CEFR level descriptions for phonological control, general phonetic awareness and skills, and listening comprehension imply a direct link between intelligibility and accentedness of NNS speech at different proficiency levels. However, as discussed above, the connection between intelligibility and accentedness in the CEFR and in L2 research is not necessarily straightforward.

Research Questions

Given the lack of proficiency level descriptions for speech perception in relation to the role of intelligibility and accentedness in the CEFR level descriptions for speech production (i.e. "phonological control"), the

following question arises: Do NNS' levels of proficiency in the L2 (English) have an influence on how accentedness and intelligibility are perceived?

It is widely accepted that speech acquisition is influenced by the learner's L1, where the structure of the L2 (i.e. the target language) plays an important role. This connection is not specified in the CEFR and leads to the question: Does the L1 influence how L2 learners perceive the accentedness and intelligibility of L2 accents (in our case in English)?

Because the CEFR is supposed to be applicable to all European languages, proficiency level descriptions are deliberately very vague. It would, however, be useful–especially for language practitioners–to have more detailed information on what influences the perceived accentedness and intelligibility in NNS accents. This study will not be able to give a thorough description of all of these features, but it is a first attempt at gathering some information on which features in non-native English speech are perceived to influence accentedness and intelligibility.

METHODOLOGY

Participants were four Spanish NNS of English who provided the speech samples (from here on called "speakers") and 20 German and Spanish NNS of English who responded to the speech samples (from here on called "listeners"). The listeners were German and Spanish NNS of English at different CEFR proficiency levels: ten German NNS of English; five at proficiency level B1 (i.e. threshold level) and five at proficiency level C2 (i.e. proficient user) and ten Spanish NNS of English; five at proficiency level B1 and five at proficiency level C2. In addition, five English native speakers took part in the study as a control group.

The English NS and C2 listeners were students in Cambridge who were studying a variety of subjects; B1 listeners were students at residential language schools in Cambridge. All speakers grew up monolingual with their L1 German or Spanish (or English for the English NS group) and had learned English at schools in their L1 environments before moving to Cambridge. Proficiency levels were established by checking the certificates of proficiency tests that the listeners had taken up to two months previously (in the case of the B1 listeners) and up to one year previously (for the C2 listeners, who had been living in the UK since taking said test). The Spanish and German listeners had stayed in English-speaking countries between three weeks and six months (for level B1) and between five months and seven years (for level C2). The age at which the

listeners started learning English was very similar across all proficiency levels. The Spanish listeners started learning English at the age of 8 (between 6 and 9 years) and the German listeners at the age of 11 (between 8 and 13 years).

The speech samples were recorded from four Spanish NNS of English with varying degrees of influence from their L1 Spanish in their English pronunciation. All of these speakers were female. The speech samples were recorded in a sound-treated room with a digital recorder. The speakers were asked to describe three different picture stories and to talk a bit about themselves without revealing any information that they would deem to be too personal. Before the recording session they were told what these recordings would be used for to ensure fully informed consent. From these recordings, short utterances were isolated using the speech processing software Audacity (version 2.0.3). These utterances varied in length between five and 15 words. For the experiment, eight speech files per speaker were selected from these utterances resulting in 32 speech stimuli in total.

The speech samples contain a great range of variation that is generally found in Spanish NNS accents of English (cf. Coe, 2001), such as

- Variation in vowel length and vowel quality
- Variation in specific consonants (e.g. /z/ towards /s/ or /ʃ/; /b/ towards /v/ or /β/; /r/ towards [ɾ] and [r]; /h/ towards /x/)
- Regular sentence rhythm, which often leads to vowels being produced as full vowels (instead of the weak forms) in unstressed syllables
- Strong devoicing of final consonants
- Narrower pitch range, leading to what is often perceived as a 'flat' intonation

The four speakers in this study show all of the above types of variation but differ in the extent to which they show this variation in their accents. In an auditory analysis, the accent of Speaker 1 showed a greater amount of the above features than any of the other three accents. The accent of Speaker 4 showed relatively few of these features while the accents of Speaker 2 and Speaker 3 ranked in-between the two.

Speech samples were played in silent conditions over headphones using a Praat (Boersma & Weenink, 2013; version 5.3.42) script on a laptop. The samples were arranged in two different randomisation patterns to address possible influences of adjacent speech samples on the ratings and also to avoid samples of the same speaker appearing in direct succession.

The procedure was subdivided into two parts and largely followed Munro, Derwing and Morton (2006):

1) The listeners were asked to transcribe exactly what they heard and then to rate the speakers' accentedness on a seven-point Likert-scale (where 1 = "no accent"; 7 = "extremely strong accent"). They could listen to each sample only once and had to write down what they heard immediately after each file was played. The task was self-paced to give sufficient time for the transcription. As soon as the accent was rated on the Likert scale, the next speech sample was played.
2) After a ten minute break this procedure was repeated. Only this time the listeners heard the samples in a different randomisation pattern and had to point out what the distinctive features of each accent were. After this, they rated the speakers' perceived comprehensibility, again on a seven-point Likert-scale (where 1 = "very easy to understand"; 7 = "impossible to understand").

In addition, the listeners filled out a questionnaire which asked for additional information on the participants' background and familiarity with languages other than their L1 and familiarity with NS and NNS accents of English. As expected, all Spanish listeners were more familiar with Spanish-accented English than the German and English listeners.

RESULTS: PERCEIVED COMPREHENSIBILITY

Main observations (cf. figure 1) indicate that of all speakers, Speaker 1 was considered least comprehensible across all listener groups. All listeners considered Speaker 3 as the easiest to understand, except for the German C2 listeners who found Speaker 4 the most comprehensible. Across the board, the German C2-level listeners rated all accents less comprehensible than the other listener groups. In addition, the Spanish and German B1-level listeners rated all accents as easier to understand than the Spanish and German C2-level listeners. These observations are not necessarily statistically significant.

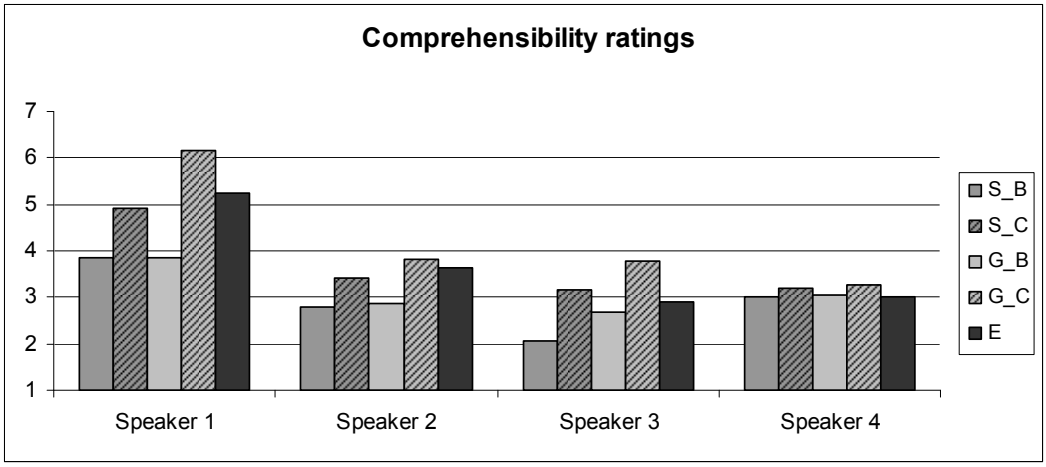

Figure 1. Average intelligibility ratings by listener group (where 1 = "very easy to understand"; 7 = "impossible to understand").

A one-way between-group ANOVA with the factor "listener group" (5) was carried out on the Likert scale ratings for "comprehensibility". Listener group had a significant effect on the comprehensibility ratings for Speaker 1 ($F(4, 20) = 13.976$, $p = 0.000$). There were no significant effects for the other speakers.

Post-hoc Tukey tests reveal that the Spanish B1-level listeners rated Speaker 1 as significantly easier comprehensible than German C2-level listeners and the English NS listeners. German B1-level listeners rated this speaker as significantly easier to comprehend than the Spanish and German C2-level listeners and the English NS listeners. In addition, the German C2-level listeners rated this accent significantly more difficult to understand than the Spanish C2-level listeners. Thus, German and Spanish B1-level listeners and the Spanish C2-level listeners considered Speaker 1 as easier to understand than the German C2-level listeners and the English NS listeners. No further interactions were significant, which indicates that the two Spanish listener groups rated Speaker 1 fairly similarly on perceived intelligibility.

The transcriptions of the speech samples by the listeners give an indication of the actual intelligibility of these accents. Despite their harsher comprehensibility ratings, the Spanish and the German C-level listeners made fewer incorrect transcriptions than their respective B-level listener group. In addition, the transcriptions of the Spanish C-level listeners revealed more errors based on intelligibility issues than the German C-level listeners, possibly indicating that familiarity with a

particular accent and sharing the same L1 may not be as strong predictors of intelligibility as it is widely believed.

Main features causing intelligibility issues across all listener groups and across all proficiency levels were:

- Variation in vowel length and vowel quality (e.g. "living" was often understood to mean "leaving", "hitting" was often understood to mean "heating" or resulted in nonsense transcriptions; "bees" was often understood to mean "beers" or "bears", "saw" was understood to mean "so", even in cases where this resulted in nonsense utterances)
- Variation in consonants (e.g. in word-final sibilants; "catch" was often understood as "cat" or, in combination with vowel variation, as "cut")
- Insertion of vowels to break up consonant clusters: this affected intelligibility only in cases where this resulted in an existing word (e.g. "stick + vowel + consonant" was understood to mean "sticker + consonant", even though this utterance then did not make sense)

Items which included a combination of factors were usually the hardest to understand. For example:

- "beaver", which for all speakers–to varying degrees–included (a) variation in the initial /b/ towards /v/ or /β/, (b) variation in the stressed vowel, (c) no schwa but a full vowel in the unstressed syllable and (d) a post-vocalic /r/ which for Speaker 1 and 3 were mostly realised as trills or taps. Listeners tended to transcribe this word as "river", "weaver", as a nonsense item or as a question mark to indicate that they did not understand it.
- "hugged", which for all speakers–to varying degrees–included (a) variation of the initial consonant towards /x/, (b) variation in the quality of the first vowel and (c) extreme cases of final devoicing of the final consonant /d/ which also devoiced /g/ and led listeners to understand "hack" or "hacked".

RESULTS: PERCEIVED ACCENTEDNESS

A one-way between-group ANOVA with the factor "listener group" (5) was carried out on the Likert scale ratings for accentedness. Listener group had a significant effect on the accentedness ratings for Speaker 1

(F(4, 20) = 3.327, p = 0.030), Speaker 2 (F(4, 20) = 4.150, p = 0.013) and Speaker 4 (F(4, 20) = 4.008, p = 0.015). There were no significant effects for Speaker 3.

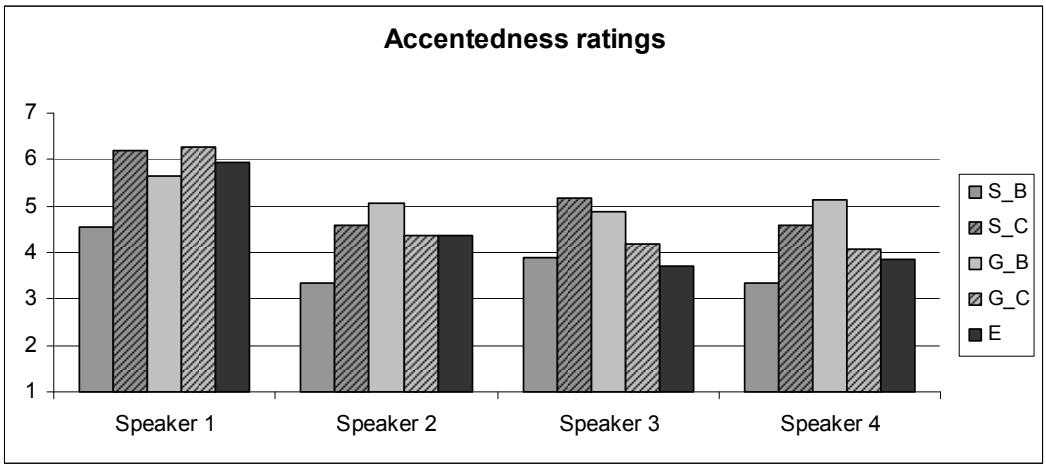

Figure 2. Average accentedness ratings by listener group (where 1 = "no accent"; 7 = "extremely strong accent").

Post-hoc Tukey tests indicate that the Spanish B1-level listeners rated Speaker 1 as significantly less accented than the Spanish and German C2-level listeners. The Spanish B1-level listeners rated Speaker 2 and Speaker 4 significantly less accented as compared to the German B1-level listeners, suggesting that there is indeed some effect for L1-background and not for proficiency level only. No further interactions were significant and none of the ratings of the English NS group were significant. This result is very different from the comprehensibility ratings which showed significant effects more for proficiency level rather than for L1-background.

In general, accentedness ratings appear to be harsher than comprehensibility ratings (cf. figure 2). Speaker 1 was rated as most accented across all listener groups. On average, Spanish B1-level listeners tended to rate the speakers as less accented compared to the Spanish C2-listeners (though this was not statistically significant throughout). There is a non-significant tendency of German B1-level listeners to rate the accents as more accented compared to the German C2-level listeners.

In the free comments, listeners identified a long list of features as contributing to the speakers' accentedness. Among the most frequently mentioned ones were variations in consonants, closely followed by variation in vowels. Many listeners also mentioned variation in stress patterns, including production of full vowels in unstressed syllables,

while variation in intonation received only a few remarks. Note that the speech samples were not balanced for phonetic features, but were based on natural speech.

As expected, listeners were more aware of features influencing accentedness rather than intelligibility (in line with Ortega-Llebaria 1997); especially the deletion of sounds to simplify consonant clusters, allophonic variation and a narrower pitch range were noted to affect the perceived accentedness without influencing intelligibility. Devoicing of word-final stop consonants influenced intelligibility but was not mentioned as contributing to accentedness.

DISCUSSION AND CONCLUSION

This paper reported a study on how German and Spanish NNS of English and English NS perceived accentedness and intelligibility in Spanish NNS accents. Five groups of listeners (German NNS of English at proficiency level B1, German NNS of English at proficiency level C2, Spanish NNS of English at proficiency level B1, Spanish NNS of English at proficiency level C2 and English NS) rated four different Spanish NNS of English with varying degrees of influence from their L1 on their English pronunciation.

The main aim was to establish whether perceptual differences exist between listeners from different CEFR proficiency levels (proficiency levels as defined in Council of Europe, 2001) and between different L1 backgrounds. The proficiency level descriptions for phonological control (i.e. speech production) in the CEFR have a strong focus on accentedness and intelligibility, very little specific information is provided for speech perception. Speech production and perception are generally considered to be very closely connected; see for example Flege's Speech Learning Model (SLM) or Kuhl's Native Language Magnet (NLM) Theory (Flege, 1995; Kuhl, 1993). For this reason, it was reasonable to expect that the Spanish and German listeners' proficiency levels in English would have a significant effect on how they perceive and subsequently rate accentedness and intelligibility.

The results for comprehensibility based on the quantitative data suggest that the Spanish and German B1-level listeners perceived Speaker 1 as easier to understand compared with the ratings of the Spanish and German C2-level listeners. Interestingly, the transcriptions indicate that both C2-level listener groups had fewer problems with intelligibility than the B1-level listener groups, revealing a discrepancy between perceived

comprehension and actual intelligibility. These results indicate that L2 perception varies according to levels of proficiency.

Note also that only the results for Speaker 1 (who was rated as least intelligible and most accented as compared to the other accents) were significantly different between listener groups. Therefore, it may well be worth looking into how the speaker's proficiency levels interact with their perceived intelligibility and accentedness. This aspect was beyond the scope of this study but future studies may find it useful to consider how proficiency levels of speakers and listeners interrelate.

An additional goal was to investigate whether influence from the L1 sound system would influence how accentedness and intelligibility are perceived. The influence of the L1 is widely regarded to be an important feature in L2 speech perception and is an integral part of L2 speech acquisition theories, such as the SLM and the KLM theory (Flege, 1995; Kuhl, 1993). There are, however, other factors which contribute to speech perception, where familiarity with the particular accent has been discussed as one of the more crucial ones (e.g. Kennedy & Trofimovich, 2008). In the present study the German C2-level listeners were less familiar with Spanish accented English than the Spanish C2-level listeners. The results reveal that the German C2-level listeners rated the Spanish accents as less intelligible than the Spanish B1-level listeners, yet the German C2-level listeners made fewer mistakes in their transcriptions than both Spanish listener groups. This suggests that familiarity may be an important factor in how we perceive and rate intelligibility, but it may not necessarily influence actual comprehensibility quite that strongly.

Overall, C2-level listeners made generally more comments on accentedness, which is probably due to more experience and familiarity with the L2 and a better command of meta-language to describe variation in language. In addition, accentedness ratings of the Spanish B1-level listeners and the German B1-level listeners were significantly different, but not the ratings of the two C2-level listener groups and the English NS group, which indicates that very advanced NNS may share more common ground in the L2 than NNS at lower proficiency levels.

The results of the intelligibility ratings reveal some significant differences between listeners at B1 and C2 proficiency levels. Extending this study to (a) also include speech samples of German-accented English and (b) speech samples that are more targeted at specific types of variation, could potentially lead to more robust results and would also pave the way for more detailed research into the acquisition of particular features in L2 speech. At a later stage, further CEFR proficiency levels

should be included for a more detailed view of perception across these levels.

This paper presents a very first attempt at tapping into the CEFR to see whether it could be useful for L2-speech research and whether L2 research can fill the gaps in the CEFR for the benefit of language practitioners and students. Clearly, a lot more work still needs to be done but what I hope this study has achieved is to show that it is worth looking into L2 speech development with reference to the CEFR.

REFERENCES

Audacity (version 2.0.3). [Computer software]. Open Source Software. Retrieved from: http://audacity.sourceforge.net/

Beinhoff, B. (2013). *Perceiving identity through accent – attitudes towards non-native speakers and their accents in English*. Oxford: Peter Lang.

Boersma, P. & Weenink, D. (2013). Praat – Doing Phonetics by Computer. [Computer software]. Retrieved from: http://www.fon.hum.uva.nl/praat/

Coe, N. (2001). Speakers of Spanish and Catalan. In M. Swan & M. Smith (Eds.), *Learner English* (pp. 90-112). Cambridge: Cambridge University Press.

Council of Europe (2001). *Common European Framework of Reference for Languages: Learning, Teaching, Assessment (CEFR)*. Retrieved from http://www.coe.int/t/dg4/linguistic/cadre_en.asp

Eisenstein, M. (1983). Native reactions to non-native speech: A review of empirical research. *Studies in Second Language Acquisition, 5*(2), 160-176.

Evison, J. (2013). A corpus linguistic analysis of turn-openings in spoken academic discourse: Understanding discursive specialisation. *English Profile Journal*, 3, e4. doi: 10.1017/S2041536212000049

Flege, J. E. & Bohn, O. S. (1989). An instrumental study of vowel reduction and stress placement in Spanish-accented English. *Studies in Second Language Acquisition, 11*(1), 35-62.

Flege, J. E. (1995). Second language speech learning. Theory, findings, and problems. In W. Strange (Ed.), *Speech Perception and Linguistic Experience* (pp. 233-277). Baltimore: York Press.

García Lecumberri, M. L. , Cooke, M. & Cutler, A. (2010). Non-native speech perception in adverse conditions: a review. *Speech Communication, 52*, 864-886.

Green, A. (2010). Requirements for Reference Level Descriptions for English. *English Profile Journal* 1, e6. doi: 10.1017/S204153621000005X

Jenkins, J. (2007). *English as a Lingua Franca: Attitude and identity*. Oxford: Oxford University Press.

Kennedy, S. & Trofimovich, P. (2008). Intelligibility, comprehensibility, and accentedness of L2 speech: The role of listener experience and semantic context. *The Canadian Modern Language Review/La Revue canadienne des langues vivantes, 64*(3), 459-489.

Kraut, R. & Wulff, S. (2013). Foreign-accented speech perception ratings: a multifactorial case study. *Journal of Multilingual and Multicultural Development, 34*(3), 249-263.

Kuhl, P. K. (1993). Innate predispositions and the effects of experience in speech perception: the native language magnet theory. In B. de Boysson-Bardies, S. De Schonen, P. Jusczyk, P. McNeilage & J. Morton (Eds.), *Developmental Neurocognition: Speech and Face Processing in the First Year of Life* (pp. 259-272). Dordrecht: Kluwer.

Lacabex, E. G., García Lecumberri, M. L. & Cooke, M. (2008). Identification of the contrast full vowel-schwa: training effects and generalization to a new perceptual context. *Ilha do Desterro, 55*, 173-196.

Lev-Ari, L. & Keysar, B. (2010). Why don't we believe non-native speakers? The influence of accent on credibility. *Journal of Experimental Social Psychology, 46*(6), 1093-1096.

Ludwig, J. (1982). Native-speaker judgments of second-language learners' efforts at communication: A review. *The Modern Language Journal, 66*(3), 274-283.

Major, R. C., Fitzmaurice, S. F., Bunta, F. & Balasubramanian, C. (2002). The effects of non-native accents on listening comprehension: Implications for ESL assessment. *TESOL Quarterly, 36*(2), 173-190.

McCarthy, M. (2010). Spoken fluency revisited. *English Profile Journal* 1, e4. doi: 10.1017/S2041536210000012

Munro, M. J., Derwing, T. M. & Morton, S. L. (2006). The mutual intelligibility of L2 speech. *Studies in Second Language Acquisition, 28*(1), 111-131.

Ortega-Llebaria, M. (1997). *An Explanatory Intelligibility Test for Spanish Accented English*. (Unpublished PhD Thesis). Indiana University, USA.

Pickering, L. (2006). Current research on intelligibility in English as a Lingua Franca. *Annual Review of Applied Linguistics, 26*, 219-233.

Piller, I. (2002). Passing for a native speaker: Identity and success in second language learning. *Journal of Sociolinguistics, 6*(2), 179-206.

Piske, T., MacKay, I. R. A. & Flege, J. E. (2001). Factors affecting degree of foreign accent in an L2: a review. *Journal of Phonetics, 29*, 191-215.

van den Doel, W. Z. (2006). *How Friendly are the Natives? An Evaluation of Native-speaker Judgements of Foreign-accented British and American English*. Utrecht: