Exploring Pitch Accent as an Element of Fluency in L2 English Academic Presentations – a Proficiency-based Sampling Report

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Abstract

The study explores the effectiveness of raising prosodic awareness in teaching academic presentations to a mixed proficiency group of adult Polish students majoring in English from the perspective of prosody as well as utterance fluency measures. A 15-week course included a 4-week prosody practice with focus on pausing and pitch accent. In the course students produced two speeches of approximately the same length: an impromptu before the practice and a prepared presentation after the practice. The speeches were recorded and analysed for the number of pitch accents and pauses. The data for three students, representing different general L2 proficiency levels are discussed in this paper. The results of prosodic performance operationalized as the pause to pitch accent ratio show the greatest benefit of prosody training in the case of the lowest proficiency level student. The analysis of selected utterance fluency measures shows a positive effect of prosody practice across speakers, providing additional support for the relevance of pitch accent in academic presentations in L2. The study has theoretical and practical implications, as it suggests the need to include pitch accent/pause proportion in utterance fluency measures in fluency studies as well as in pedagogical practice.

Keywords: L2 English prosody, Pitch accent in L2 English, L2 utterance fluency, L2 academic presentation

1. Introduction

Prosody, understood as "the aspects of speech that carry across an utterance: stress, intonation, rhythm" (Derwing & Munro, 2015, p. 5) and hence synonymous with suprasegmental aspects of pronunciation, has been long recognized as a key factor in L2 English speech, crucial for intelligibility and comprehensibility for native speakers of English (e.g. Anderson-Hsieh, Johnson & Koehler, 1992; Derwing, Munro & Wiebe, 1998; Hahn, 2004). It has been found teachable and

learnable, with significant effect of prosody instruction on comprehensibility and perceived fluency observed in L2 extemporaneous speech samples (Derwing, Munro & Wiebe, 1998). Gilbert (2008) defines prosody as a combination of rhythm and melody and treats it as 'road signs' which direct the listeners and help them follow the speaker's meaning: the importance of road signs cannot be overestimated, as when they mislead the listener, s/he may find it difficult to recall the content of the speech (Hahn, 2004). For L2 presentations, the 'road sign' metaphor seems particularly well-suited, as it is the presenter's ability to attract the listeners' attention that is crucial for success. One of the key features mentioned in manuals on public speaking (e.g. Lamerton, 2001; Morrison, 2017) is the so-called 'lively voice'. i.e. speaking with varied intonation. The 'liveliness' has been studied as feature of oral presentations in L2 English, e.g. with respect to Chinese (Lima, 2016) as well as Swedish (Hincks, 2005) students. Hincks (2005) hypothesized that students with higher pitch variation would be perceived as more lively speakers and having supported her hypothesis suggested the use of automatic feedback for practice. Lima (2016) has also addressed liveliness in her study and found that training in prosody may help in academic success as it increases positive comprehensibility ratings even when foreign accent is perceived as strong. While the 'liveliness' of speech, or the extent of pitch variation have been found to contribute to the attractiveness of the oral presentation, it is the very movement of the pitch that forms the basis of successful chunking. However, the use of pitch movement for signalling prosodic boundaries in English is far from obvious for many L2 speakers.

One of the practical solutions to prosody teaching is the 'Prosody Pyramid' proposed by Gilbert (2008). As already mentioned, her idea of prosody as 'road signs' seems to offer a perfect framework for L2 learners aiming to work on oral presentations, as they "(…) help the listener to follow the intention of the speaker" (Gilbert, 2008, p. 2). She goes on to say that "[the principle of 'helping the listener to follow' is a vital one. It is so central to communication, in fact, that time spent on helping students concentrate on major rhythmic and melodic signals of English is more important than any other efforts to improve their pronunciation." The road signs are based on pitch accent, i.e. the stressed vowel in the main syllable of the focus word of a thought group. This practical approach follows theoretical accounts of the prosodic structure of English, where pitch accents are defined as depending on "some sort of obtrusion of pitch at the point of accent from the pitch of surrounding syllables (Cruttenden, 1986, p. 48). The direction and the range of pitch movement may vary, but the very fact of noticeable difference in the pitch remains crucial for communication. Interestingly, the relevance of pitch accent for communication has been noticed in English as a Lingua Franca

– in her proposed Lingua Franca Core, Jenkins (2000) includes production and placement of nuclear (tonic) stress in the group of features important for mutual intelligibility in ELF, unlike such aspects of prosody as word-stress, stress-timed rhythm or the direction of pitch movement.

Given the relevance of pitch accent for oral communication in general, and for longer speech presentations in particular, the inclusion of prosody awareness raising and practice in an academic presentations course seems to be well-motivated. The motivation for working on prosodic aspects of longer speeches with Polish students of English is further strengthened by cross-linguistic differences between the two languages. With their native language characterized by the tendency for a relatively less dynamic stress pattern (mixed rather than stress-timed rhythm, see Ramus, Nespor & Mehler, 1999) and no vowel reduction in careful speech (but see Wierzchowska, 1980), native speakers of Polish can be expected to find it difficult to use the stress-based rhythm of English, particularly in formal contexts, when the tendency for syllable-timing in Polish is strengthened, as illustrated by syllable-based rhythm in Polish classical poetry. Formality may also affect the use of pitch variance required to create the impression of liveliness, as it is in emotional / informal contexts that it is expected in Polish, but not in emotionally neutral contexts (Wierzchowska, 1980). The rules of correct pronunciation in Polish, which, although more implicitly than explicitly present in Polish language pedagogy, praise slow and careful articulation (e.g. Wiśniewski, 1998) further complicate the situation, potentially affecting the speaking rate and prosodic organisation.

This paper explores the the use of prosody in monologues performed in English by Polish advanced adult learners of English in the context of an academic presentations course. The monologues, meant as public speeches/academic presentations, differ in formality, length and preparation time; they are produced in a sequence, with the time span between the first (impromptu) and the second (short presentation) devoted to prosody awareness raising and practice (4 weeks). As the formality of the task increases, so does the amount of practice, which would be expected to lead to improvement in the use of prosody and fluency even in a short period of time (e.g. Tavakoli, Cambell & McCormack, 2016). There are, however, additional factors that can be expected to affect students' performance across the tasks, such as transfer from Polish or the anxiety level (see Lintunen and Szyszka, in press) as the length and formality of the task increases. The effectiveness of pedagogic intervention can be further mediated by the level of L2 English proficiency, the aspect tackled in this paper by choosing for the analysis the speeches of three students assessed as representing different proficiency levels. The analysis focuses on the use of pitch-accent and pausing, the aspect of prosodic organization which we propose to be included in the discussion of utterance fluency in L2 English.

2. Pitch-accent as an aspect of fluency in L2 English:
   Theoretical background

The term pitch-accent as used in this study refers to prominence given to a syllable within a phrase, the phenomenon described by Bolinger (1958, p. 112) who claimed that "pitch prominence is essential to what we react to as stress" and defined prominence as "a rapid and relatively wide departure from a smooth or undulating contour". For Cruttenden (1986, p. 48) "PITCH ACCENTS depend on some sort of obtrusion of pitch at the point of accent from the pitch of the surrounding syllables. Such obtrusions depend on movement to and from the accented syllable (…). Accents may involve either a movement to or a movement from alone, or a combination of both types of obtrusion." Following Laver (1994, p. 493), we will use this term "for any pitch configuration that makes a syllable prominent, whether the pitch obtrusion involved is phonetically dynamic (rising, falling, rising-falling, falling-rising) or phonetically stepping (from or to a given pitch value) in nature".

The prominence of stressed syllables has been referred to as 'road signs' for native speakers of English by before-mentioned Gilbert (2008, p. 2) who stresses the need for "listener friendly" pronunciation, with a clear stress pattern that helps the listener to follow the speaker. The stress pattern operates at the level of a thought group, which is defined as a group of words (also a word, a phrase, a clause) most often demarcated by a pause, a drop in pitch and the step down of pitch and the lengthening of the last stressed syllable (Gilbert, 2008).Writing about intonation in English, Cruttenden (1986) talks about a pause, the anacrusis at the beginning of a thought group (or intonation-group in his account), final syllable lengthening and the drop in pitch of final unaccented syllables. Apart from defining the boundaries, the key element deciding about the presence of a thought (intonation) group is the use of a pitch-accent within the group (Cruttenden, 1986, p. 43).Thus, the crucial element for each thought-group is the focus word, the importance of which is highlighted by the change in pitch (pitch accent), i.e. the intonational emphasis. The placement of this emphasis as well as the degree (and direction) of pitch change are crucial for communication both as 'road signs' and signals of pragmatic meaning (e.g. question vs. statement). Interestingly, however, it is the change itself rather than the direction that matters, as pitch changes are the most important signals of new information or of words of special importance (Bolinger, 1989).

Thought-group organization in English may cause a number of difficulties to L2 speakers; depending on characteristics of their L1, these may include variable nature of lexical stress and the emphasis and de-emphasis, i.e. the articulatory strengthening of stressed syllables in content words vs. weakening of unstressed syllables or structure words. It is the interplay between the two (emphasis and de-emphasis) that makes pitch-accent 'stand-out' and, consequently, function as a 'road-sign'. As the structure of the thought group varies - it may be a short

sentence, a clause or a phrase in a longer sentence (Gilbert, 2008) - the listener-friendly pronunciation will entail emphasizing the focus word with the pitch accent of the right syllable in a word (following the rules of lexical stress in multi-syllable words), pronouncing a full stressed vowel in lexical words and reducing (de-emphasizing) function (structure) words. As noticed by van Maastricht, Krahmer and Swerts (2016, p. 22), if the L2 speakers' native language "does not use pitch accent to mark focus the same degree as many Germanic languages do" they might not be able to produce a pitch accent on the focus syllable and de-accent the element which is not in focus (e.g. the final one).

The effect of incorrect use of prosodic cues by L2 speakers has been studied with respects to native vs. non-native speaker reaction. In an interesting study advocating prosody instruction, Hahn (2004) investigated the effect of primary stress placement in the case of an international teaching assistants and found that after listening to the lecture with correct stress placement, native American students recalled the context better, they also processed it faster and rated the lecturer more favourably than when the primary stresses were misplaced or missing. van Maastricht, Krahmer and Swerts (2016), have studied the effect of problems with pitch accent placement for L1 Dutch and L2 Spanish. The results of three experiments: rating for nativeness, accentedness and comprehensibility, ability to distinguish prosodically correct from incorrect speech in L1 as well as L2 and the processing time, show the unsurprising preference for L1 in L1 raters. The interesting results come from the comparison of two levels of L2 proficiency introduced in the study: when compared, the lower proficiency L2 speakers are rated significantly less favourably than more proficient ones with respect to accentedness and nativeness, but not comprehensibility. Additionally, the study reports a significant difference in reaction time to native vs. non-native speech, but finds that the effect is due to the speech rate difference (i.e. the slower speech rate of L2 speakers). In conclusion, the authors stress the relevance of speech rate and proficiency level in connection with native speakers' reaction to pitch accent placement in L2 speech.

The relationship between speech rate and language proficiency has been discussed from the perspective of language fluency with reference to L1 and L2. Kormos (2006, p. 154) talks about fluency gap between L1 and L2 and attributes it to "the deficient knowledge of L2 (…), attentional resources needed for suppressing L1 production procedures, and greater demands on self-monitoring". The relevance of speech rate in L1-L2 speaker communication has been verified by Munro and Derwing (1998, 2001) who found slower speech lowering the comprehensibility of L2. However, the tempo of speech in L2 can be expected to be related not only to the level of L2 proficiency but also the characteristics of L1. In a small-scale study, Roach (2002) finds speech rate in L1 Polish to be considerably slower than L1 British English; Guz (2015) looks for temporal characteristics of Polish speakers of English in their L1 and L2 and concludes that speech rate is the only temporal parameter that correlates, albeit weakly, across

the languages, which means that speakers slower in L1 can be expected to be slower in L2 and conversely, fast L1 speakers will speak faster in L2. Although correlated, the rate of speech is still much slower in L2 than L1 for the speakers (with L1 speech and articulation rate faster about 70% when compared to L2). Given the tendency for L1 Polish to be slower than L1 English, the results of the study suggest a potential problem for Polish learners of English, particularly those at lower proficiency level. Increasing the tempo of speech may be needed for improving comprehensibility, i.e. helping the listeners in understanding the message with less difficulty. However, as noticed by Roach (2002, p. 204), faster speech may decrease intelligibility if the L2 speaker increases the speech rate, but not fluency, i.e. they do not "reduce their need for hesitations, pauses and repairs"

The speed of speech, together with pausing, belongs to key aspects of fluency, which Fillmore (1979, p. 51) talks about as "(…) simply the ability to talk at length with few pauses"; with reference to non-native speech, Segalowitz (2007, p. 181) defines fluency as "those aspects of productive and receptive language ability characterized by fluidity (smoothness) of performance". The fluidity tends to be associated with long runs between pauses and studies show that such aspects of utterance fluency as speech tempo and the amount of pausing prove to be well correlated with perceived fluency (Segalowitz, 2010). Utterance fluency tends to be measured with respect to three aspects (Skehan, 2009): speed, breakdown and repair, with speaking rate (speaking time divided by the number of syllables), articulatory rate (speaking time excluding pauses – phonation time – divided by number of syllables) for speed, the number of silent pauses per speaking time and mean length of silent pauses for breakdown, among others (see e.g. Kormos & Denes, 2004; Guz, 2015). Apart from the above, however, perceived fluency has been also shown to be affected by prosody, with L2 speakers who use broader pitch range and pause at clause boundaries rated more fluent (Wennerstrom, 2000). Derwing et al. (2004) included selected utterance measures and prosody rating in the study of fluency judgment across tasks and found that while fluency measures and rating were higher for monologue and dialogue tasks than picture-based narrative, the prosody rating did not differ across tasks. The authors conclude that although in general prosody does affect fluency ratings, it does not change across tasks performed one after another, unlike fluency, whose measures and rating reflect task complexity. In the present study as task complexity increases, so does the prosodic awareness of the learners, and consequently, we expect to observe changes in the use of prosody as the course progresses.

3. Method

The aim of this study is twofold: firstly, we aim to explore the effect of prosody practice on the use of pitch accent within thought groups by L2 students with a varying level of language proficiency, and secondly, we aim to compare the use

of pitch fluency with other measures of utterance fluency: speech rate, articulatory rate and pause proportion across the tasks performed by the students.

The exploratory study research of the effect of task and prosody practice on spoken performance was planned to be performed during a one semester (15 weeks) academic presentation course taught by the first author at the University of Warsaw, Poland. The course was available to students majoring in English at the BA or MA level as an elective; 16 students in different programmes with different level of English general proficiency enrolled in the course (15 females and 1 male). The speeches produced by three female students in an MA programme, representing different levels within advanced proficiency level defined as low, mid and high respectively on the basis of their general English proficiency exam scores and the assessment by the instructor, were selected for the preliminary analysis. The following research questions were formulated:

RQ1: What is the task and prosody practice effect on the use of pitch accents in thought groups by individual students?

RQ2: Are there differences in the task and prosody practice effect on the use of pitch accents in thought groups between students representing different levels of L2 proficiency?

RQ3: What is the relationship between the task and prosody practice effect on the use of pitch accents as compared to utterance fluency measures?

The task characteristics and and prosody practice provide different conditions for speech production; their effect is considered in combination, as the action study nature of this research does not make it possible to disentangle the two conditions. The use of pitch accents in thought groups has been operationalized by means of the ratio of silent pauses to pitch accents; utterance fluency measures include speech rate (syllables divided by total time), articulatory rate (syllables divided by phonation time) pause proportion (length of silent pauses divided by total time x 100).

3.1 Procedure

The study comprised four elements: (1) elicitation of good presentation features, (2) the production of impromptu speech on a topic selected from the ones provided by the instructor, (3) a four-week prosody-focused practice, (4) the production of a prepared short speech on the same topic. It was conducted during the course, with students granting permission for the materials, including the recordings of their oral productions, to be used for research purposes.

The elicitation of good presentation features was implemented at the beginning of the part of the course devoted to linguistic aspects of oral academic presentations, after two earlier classes (1,5h each) during which preliminary aspects of academic presentations were discussed. This was done through a written open-question survey with two questions: (1) What makes a successful presentation successful? (2) What are the most important linguistic elements of successful

presentation? The written part was followed by a group discussion, with students exchanging ideas on the basis of what they wrote without earlier discussion and/or consultation. After the elicitation, students produced impromptu speeches – the topic was chosen from the ones provided by the instructor. The following 3 classes were devoted to prosody practice, with awareness raising through the discussion of different presentations and exercises in different levels of stress, lexical/phrase and sentence stress, pitch accent and pausing with the use of sound scripting. After the 3 classes, students had the task of preparing a short presentation on the topic they had chosen for their impromptu speech.

The presentations were recorded by the principal researcher, transcribed and then analysed first auditorily for silent pauses and pitch accents, and then instrumentally with the use of PRAAT (Boersma & Weening, 2007, De Jong & Wempe, 2009); the length of silence to count as a pause was set at 0.25s (Laver, 1994). The following temporal measures were extracted: length of speech, length of pauses and number of syllables. The value for the variables used in the study: pause/pitch accent ratio, speech rate, articulatory rate and pause proportion was then calculated manually.

3.2 Participants

As already mentioned, the course was open to BA and MA level students majoring in English; consequently, there were significant differences in a general L2 proficiency level within the group. As the major interest of this study is to observe the effect of prosody instruction to different level of proficiency within the advanced level (C1 CEFR scale), the recordings of three students at MA level with different grades in general English were selected for further analysis. All participants were native speakers of Polish, enrolled in the English studies programme at the University f Warsaw.

The students whose oral performance has been selected for analysis represent three levels within advanced level of English proficiency as verified by their academic record (grades in General English exam) and the assessment made by the instructor; they are all females, aged 23-24, with the experience of a BA in English at the same university. At the time of the recording, they were working towards their MA in English, which typically takes two years. In the instructor's opinion they were highly motivated and enthusiastic students. For the sake of the study their names have been letter-coded and the levels have been described as A – 'high-proficiency level', S – 'mid-proficiency level' and K -'low-proficiency level'.

4. Results

The results obtained from the analysis of two recorded speeches are presented for each participant. The variables chosen to be investigated provide insights into different aspects of L2 speech and their interpretation needs to reflect their

characteristics. The first variable, pause to pitch accent ratio reflects the ability to signal focus in the thought group with pitch change noticeable to the listener; consequently, the closer the ratio is to 1 the better – the ideal relationship would reflect pitch change used to signal every thought group, i.e. a perfect road sign. The speed measures of utterance fluency, on the other hand, inform us on the tempo of speech with silent pauses included (speech rate) or excluded (articulation rate), giving insights into the difference between the speed of articulation itself or the tempo of speech as perceived by the listeners (i.e. affected by the number and length of pauses). The length of pauses is further viewed form the perspective of total speech time, providing information as to the extent to which pauses take the speech time: here the lower the result, the better for fluidity of speech. The interpretation of the results requires taking into account not only the task characteristics and the level of proficiency of the speaker, but also the very nature of the task, which in the case of academic presentation requires pausing for emphasis. The emphasis, however, calls for the use of a pitch accent, hence the two measurements, pause ratio and pitch accent ratio can be seen as complementing each other, as a relatively high ratio of pauses will not reflect not dis-fluency if the pitch accent ratio is low. In fact, the prosody practice with sound scripting aimed to raise students' awareness as to the need to use pauses (and pitch accent) for emphasis.

We begin the with the highest proficiency students, A, whose oral performance has been rated very high both by the examiners at the university and the Academic Presentation Course instructor (grade 5 on a rising 2 to 5 scale). As can be seen in Table 1, the speaker's tempo of speech increases in the production of a prepared short speech: the total length is shorter, but the number of syllables increases, and consequently, the speech ratio goes up. The faster speech includes fewer pauses, the articulatory rate goes up and the pause ratio lowers. Interestingly, however, the ratio of pauses to pitch accents, almost ideal in the impromptu, goes up in the prepared speech. The ratio is still low, however the very tendency for a prepared speech to contain thought groups not stressed with pitch change needs to be noticed.

Table 1: Data for A – High-Proficiency Speaker

Speech	Impromptu	Prepared
Length	41.06s	34.93s
Number of syllables	113	129
Speech rate	2.75	3.69
Articulation rate	4.16	4.77
Silent pause ratio	33.9	22.7
Pitch accent ratio	1.16	1.45

The second speaker, S (see Table 2), assessed as less proficient in oral productions than speaker A (grade 4 on a rising 2 to 5 scale), is slightly slower in delivery, both in terms of speech and articulatory rate, however, the tendency for both ratios to be higher in prepared speech can be also, seen, with a similarly smaller change in the case of articulatory than speech rate. The pause ratio goes down in a prepared speech almost by half, but the pitch accent ratio; the pitch ratio, on the other hand does not change – interestingly, it remains at the same, relatively good level.

Table 2: Data for S – Mid-Proficiency Speaker

Speech	Impromptu	Prepared
Length	44.78s	37.82s
Number of syllables	103	115
Speech rate	2.30	3.04
Articulation rate	3.34	3.62
Silent pause ratio	31	16.1
Pitch accent ratio	1.52	1.5

Table 3: Data for K – Low-Proficiency Speaker

Speech	Impromptu	Prepared
Length	69s	40s
Number of syllables	200	159
Speech rate	2.89	3.97
Articulation rate	3.34	4.36
Silent pause ratio	19.23	9.2
Pitch accent ratio	2.77	2.19

The data for the third speaker, K (see Table 3), assessed as the weakest of the three (grade 3 on 2 to 5 scale), show a similar pattern to the one found in the other speakers with respect to an increase in both speech and articulation rate, and a drop in silent pause ratio. However, the pitch accent ratio, although much higher than in the other speakers, does go down, i.e. the number of thought groups produced without a pitch accent gets lower. The increase in the tempo of speech, particularly in the case of articulation rate is related to a much lower pause ratio – the speaker becomes considerably more fluent, with positive effect with respect to the use of pitch as well.

5. Analysis and discussion

The aim of the study was to explore the use of pitch accent in in relation to the task and prosody practice between the tasks in individual students (RQ1) and across students representing different levels of general proficiency in English (RQ2) as well as to observe possible relationship between pitch ratio and selected utterance fluency measures (RQ3).

With regards to RQ1, the analysis of the speeches produced by the students shows a varied effect of task and prosody practice on the use of a pitch accent in thought groups for individual students. In fact, each participant seems to follow their own paths. Student A, a successful user of prosody from the start, tends to increase the number of thought groups with no clear pitch accent in the presentation which she has taken time to think over and prepare. A potential reason for the change may be associated with the seriousness of the task – as mentioned in the Introduction, Polish tends to be less rhythmical and more monotonous in more formal contexts, so one possible explanation of the negative effect of preparation on rhythmicality and liveliness of the speech in English might be caused by interference from phonostylistic norms of Polish. This effect is not seen, however in either of the two other speakers: student S does not change the pitch accent ratio across the tasks, while the third participant, K, does, but in the direction expected as the positive effect of prosody training and task preparation: this student as the only one does increase the use of pitch accents in her organization of speech. The proportion is still far from ideal, with 2.77 going down to 2.19, as compared to a stable 1.5 for S and 1.16 to 1.45 for A. Clearly, the effect of prosody practice and task requirements does not follow a unified pattern, and one of possible sources of difference might be the level of language proficiency.

Differences in L2 proficiency of the speakers can be seen in the very level of pitch accent ratio: student A has the lowest one, student S mid and student K the highest, which means that in her case the number of pauses and pitch accents are most divergent. In fact, translating the results into speech reality, K signals the most prominent syllable in a thought groups with pitch change in every third thought group in the first task and gets closer to every two in the second. While S does it in every other thought group, A is close to one pitch accent per thought group in impromptu, and closer to every other one in prepared speech. RQ 2 is thus answered by this exploratory study positively: the language proficiency level does affect the use of pitch accent in relation to task/prosody practice. However, the direction of the change and any cause-effect relationship obtaining there would require a more detailed study. The results of our investigation suggest a possible dynamism in the development of pitch accent ratio across students with different language proficiency levels, with different aspects deciding about the final outcome of prosody training. Our data show the greatest progress in the least proficient student; it is up to further studies to show why the practice did not cause any change in the mid-proficiency student and a reverse one in the high-proficiency one.

As we assumed that pitch accent ratio could be interpreted not only in terms of prosodic organization, but also the fluency of speech, we further analysed selected utterance fluency measures (RQ3). The comparison of the indices offers a complimentary picture, albeit a more symmetrical one in the case of speed and pause proportion than pitch accents. Firstly, the effect of preparation / prosody instruction has similar effect in the case of all participant, as they increase their speech and articulatory rate and lower the proportion of pauses in a prepared, post-prosody practice recording. The temporal characteristics reflect the proficiency level, with speaker A the fastest and increasing the tempo of speech in the prepared/post-practice recording both in speech and articulatory terms; speakers S and K are slower respectively, but it is the less proficient (and slower) speaker K who makes the greatest leap and after practice, reaches the speech and articulatory rate values of the most proficient speaker. One aspect that dos not fit this otherwise symmetrical dataset is pause proportion, which decreases by half in mid- and low-proficiency speaker, but not the high-proficiency one, who seems to implement the pause system in her academic presentation speech. Clearly, further analysis is needed to uncover the processes underlying the above results, but the difference between the participants with respect to both pitch accent ratio and utterance fluency measures seems to indicate the need for inclusion of pitch ratio into the inventory of measures relevant for L2 oral performance.

6. Conclusion

Due to the exploratory nature of the study presented here, the conclusions are tentative and their aim is to suggest further research in the area. The main aim of the paper was to show the relevance of pitch accent as an index of oral speech analysis and assessment in L2 English; the inclusion of this aspect of prosody in connection with other fluency measures seems to be motivated by our findings, which illustrate the complex picture of fluency development in an academic presentation course. The study explored the recordings of speeches produced by advanced learners of English and showed that the level of proficiency within this group matters: the most proficient speaker proved to be most confused by prosody training and consequently, affected by L1-phonostylistic rules of slower and less lively speech in a more formal context. The mid-proficient student seems to have been resistant to the training, with speed fluency aspects influenced more than pitch accent, while the student with the lowest level of proficiency (within the advanced-level group) has gained most in the course of prosody practice as seen in pitch ratio as well as speed and pause measures.

There are numerous limitations to the study presented above, including a small number of observations, a short time of exposure to practice, a limited number of fluency measures employed and the lack of perceived fluency judgment based on a larger group of assessors. We have not considered individual characteristics

of speakers, their attitudes, course expectations and the evaluation of the goals or prosody awareness raising part of the course. However, given the exploratory nature of this paper, we believe that we have provided preliminary evidence calling for further research in the area of prosody training in different contexts. Moreover, we hope to have shown the need to stress the role of prosody in fluency assessment; pitch accent, believed to be relevant not only in L2-L1 communication, but also communication across L2s, needs to be practiced and seen as an integral part of oral presentation courses.

References

Anderson-Hsieh, Janet; Johnson, Ruth and Kenneth Koehler. 1992. The relationship between native speaker judgments of nonnative pronunciation and deviance in segmentals, prosody, and syllable structure. *Language Learning*, 42, 529-555. http://doi.10.1111/j.1467-1770.192.tb01043.x

Boersma, Paul and David Weenink. 2007. Praat (Version 6.2.09) [Software]. Available for download from www. praat.org

Bolinger, Dwight L. 1958. A theory of pitch accent in English. *Word*, 14, 109-149.

Cruttenden, Alan. 1986. *Intonation*. Cambridge: Cambridge University Press.

De Jong, Nivja H. and Ton Wempe. 2009). Praat script to detect syllable nuclei and measure speech rate automatically. *Behaviour Research Methods*, 41, 385–390. doi: doi.org/10.3758/BRM.41.2.38.

Derwing, Tracey M. and Murray J. Munro. 2015. *Pronunciation Fundamentals: Evidence-based Perspectives for L2 Teaching and Research*. Amsterdam: John Benjamin Publishing.

Derwing, Tracey M.; Rossiter, Marian; Munro, Murray J. and Ronald Thomson. 2004. Second language fluency: Judgements on different tasks. *Language Learning*, 54, 655-679. doi.10.1111/j.1467-9922.2004.00282x

Derwing, Tracey, Munro, Murray J. and Grace Wiebe. 1998. Evidence in favour of a broad framework for pronunciation instruction. *Language Learning*, 48 (3), 393-410.

Fillmore, Charles J. 1979. On fluency. In C. J. Fillmore, D. Kempler & W. S. Y. Wang (eds.), *Individual Differences in Language Ability and Language Behavior*, 85-102. New York: Academic Press.

Gilbert, Judy B. 2008. *Teaching Pronunciation Using the Prosody Pyramid*. Cambridge: Cambridge University Press.

Guz, Ewa. 2015. Establishing the fluency gap between native and non-native speech. *Research in Language*, 13 (3), 230-247. doi.10.1515/rela-2015-2021.

Hahn, Laura D. 2004. Primary stress and intelligibility: Research to motivate the teaching of suprasegmentals. *TESOL Quarterly*, 38, 201-236. doi.org. 10.2307/3588378.

Hincks, Rebecca. 2005. Measures and perception of liveliness in student oral presentation speech: a proposal for automatic feedback mechanism. *System* 33 (4), 575-591.

Jenkins, Jennifer. 2000. *Phonology of English as an International Language.* Cambridge: Cambridge University Press.

Kormos, Judit. 2006. *Speech Production and Second Language Acquisition.* Mahwah, N. J.: Lawrence Erlbaum Associates.

Kormos, Judit and Mariann Denes. 2004. Exploring measures and perceptions of fluency in the speech of second language learners. *System*, 32(2), 146-164. doi.org/10.1016/jsystem.2004.01.001

Lamerton, Jacey. 2001. *Public Speaking*. Collins.

Laver, John. 1994. *Principles of Phonetics*. Cambridge: Cambridge University Press.

Lima, Edna F. 2016. Comprehensibility and liveliness in nonnative student oral presentations before and after training: a mixed methods study. *System*, 63, 121-133.

Lintunen, P. & Szyszka, M (in press). Zooming into L2 speech fluency markers of anxious and non-anxious advanced L2 learners – an extreme case sampling report. To appear in *Research in Language*.

Morrison, Topher. 2017. *The Book on Public Speaking*. Morgan James Publishing.

Munro, Murray J. and Tracey M. Derwing. 1998. The effects of speaking rate on listener evaluation of native and foreign-accented speech. *Language Learning*, 49, 285-310. doi.10.111/1467-9922.00038

Munro, Murray J. and Tracey M. Derwing. 2001. Modelling perceptions of the accentedness and comprehensibility of L2 speech: The role of speech rate. *Studies in Second Langaue Acquisition*, 23, 451-468.

Ramus, Franck; Nespor, Marina and Jacques Mehler. 1999. Correlates of linguistic rhythm in the speech signal. *Cognition*, 73 (3), 265-292. doi.10.1016.S0010-0277(00)00101-3

Roach, P. 2002. Studying rhythm and timing in English speech: Scientific curiosity., or a classroom necessity? In E. Waniek-Klimczak and P. J. Melia (eds.), *Accents and Speech in Teaching English Phonetics and Phonology*, 199-206. Frankfurt: Peter Lang.

Segalowitz, Norman. 2007. Access fluidity, attention control, and the acquisition of fluency in a second language. *TESOL Quarterly*, 41 (1), 181-186.

Segalowitz, Norman. 2010. *Cognitive Bases of Second Language Fluency*. New York: Routledge.

Skehan, Peter. 2009. Modelling second language performance: Integrating complexity, accuracy, fluency, and lexis. *Applied Linguistics*, 30 (4), 510-532. doi.org/10.1093/applin/amp047

Tavakoli, Parvaneh, Cambell, Colin and Joan McCormack. 2016). Development of speech fluency over a short period of time: Effects of pedagogic intervention. *TESOL Quarterly*, 50 (2): 447-471.

van Maastricht, Lieke, Krahmer Emiel and Marc Swerts. 2016. Native speaker perception of (non-) native prominence patterns: Effects of deviance in pitch accent distribution on accentedness, comprehensibility, intelligibility, and nativeness. *Speech Communication*, 83, 21-33.

Wennerstrom, Ann. 2000. *The Music of Everyday Speech: Prosody and Discourse Analysis*. Oxford: Oxford University Press.

Wierzchowska, Bożena. 1980. *Fonetyka i Fonologia Języka Polskiego*. Wrocław: Ossolineum.

Wiśniewski, Marek. 1998. *Zarys Fonetyki i Fonologii Współczesnego Języka Polskiego*. Toruń: Wydawnictwo Uniwersytetu Mikołaja Kopernika.