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SPEECH FLUENCY: A RESULT OF ORAL LANGUAGE PROFICIENCY?

1 INTRODUCTION

When communicating with speakers who speak a foreign language well, we often describe their speech to be fluent, which means it is very similar to the speech of native speakers. However, what does it actually mean to speak fluently? According to Lennon (1990), speech fluency has two meanings. In the broader sense, fluency seems to mean global oral proficiency, and in the narrower sense, it can be considered as a component of oral proficiency. In other words, when we talk about fluency in the broader sense we refer to language proficiency, that is, to its general realisation. On the other hand, when we talk about fluency in the narrower sense, we refer to one of the aspects of language proficiency, that is, to the actual temporal aspect which has been studied more intensely since the 1990s within the theory of applied linguistics and foreign language acquisition. It is in the latter sense that we look at the issue of fluency in this paper in which we explore the relation between the level of language proficiency and speech fluency.

2 FLUENCY IN FOREIGN LANGUAGE ACQUISITION

The issue of fluency has been the object of study for decades. Kormos and Dénes (2004: 147) describe the development of the field and indicate that one of the first researches of the issue was by Fillmore in 1979 in which the author defined four different abilities which reflect speech fluency in the first language (L1): a. the ability to talk at length with few pauses; b. the ability to talk in coherent, reasoned and seman-

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tically dense sentences; c. the ability to have appropriate things to say in a wide range of contexts; and d. the ability to be creative and imaginative in language use (Fillmore 1979: 93). It should be noted that most of those abilities are abstract and are thus difficult to be researched or confirmed scientifically.

In the 1980s first researches of fluency in the foreign language (LF) have been carried out, motivated by an increased interest in communicative language teaching. By studying LF performance and proficiency, the researchers have, in most cases, agreed that the two categories are "multi-componential in nature, and that their principal dimensions can be adequately, and comprehensively, captured by the notions of *complexity*, *accuracy* and *fluency*" (Housen/Kuiken 2009: 461). The authors continue that these three components "have been used both as performance descriptors for the oral and written assessment of language learners as well as indicators of learners' proficiency underlying their performance; they have also been used for measuring progress in language learning." Based on that, we can conclude that the three components, to which Skehan (2009) later adds the fourth, not less significant component – lexis, determine the level of language proficiency. In other words, "it is assumed that a proficient speaker will be able to perform tasks fluently and accurately, using complex language" (Ellis 2009: 475). However, the abovementioned components do not appear at the same level. As Housen and Kuiken (2009: 462) state, complexity and accuracy are primarily linked to the current state of the learners' interlanguage knowledge, whereas fluency is primarily related to learners' control over their linguistic LF knowledge, as reflected in the speed and ease with which they access relevant LF information to communicate meanings in real time.

Speech fluency in foreign language acquisition is, therefore, one of the descriptors of LF oral production. Ellis (2009: 475; based on Skehan and Foster 1999) defines fluency as "the capacity to use language in real time, to emphasize meanings, possibly drawing on more lexicalized systems." Housen and Kuiken (2009: 463) highlight its multicomponentiality which is made up of different subdimensions, such as speed fluency, breakdown fluency and repair fluency. Skehan (2009: 513) is of similar opinion, stating that regarding fluency "a range of measures are available, broadly examining: a. breakdown (dys)fluency, indexed by pausing; b. repair (dys)fluency, indexed by measures such as reformulation, repetition, false starts, and replacements; and c. speed, with measures such as syllables per minute." In this research fluent speech is defined as speech at a natural rate without hesitations, pauses, repetitions, reformulations, filler words and filled or unfilled pauses in processing, appropriate to the informative and communicative load of expression, all of which presuppose efficient and coordinated functioning of all levels of oral production. Although speakers strive for ideal speech, disfluency cannot be avoided. There are various reasons for this, among which the following are in our opinion certainly the most relevant: informative load of the expression and the related complexity of information processing, regulators of communicative relations between the speaker and the listener, and in the LF, above all, the imperfect or incomplete mechanism of oral production (see Požgaj Hadži et al. 2012).

3 RESEARCH

Although fluency is one of qualitative descriptors in the assessment of oral proficiency in *Common European Framework of Reference for Languages: Learning, Teaching, Assessment* (CEFRL; among which are also range, accuracy, interaction and coherence), in teaching and learning Croatian (and Slovenian) as LF, speech fluency does not receive sufficient attention. This is confirmed by recent textbooks for Croatian as LF which include only a limited number of exercises in spontaneous speech, while most exercises are based on the reproduction of content from the text found in the unit, or are designed for practicing grammar structures, that is, accuracy of speech. The fact that this field has not been sufficiently researched in both Croatian and Slovenian and that the studies so far (Horga/Požgaj Hadži 2004, Požgaj Hadži and others 2012) have left many questions unanswered has motivated us to continue with the researches of speech fluency in LF.

3.1 Research aim

The aim of this research is to find an answer to the question whether speech fluency is influenced by language proficiency or by some other abilities of the speaker. Based on Slovenian as L1 and Croatian as LF, we explore the differences in speed fluency, i.e. speech rate, articulation rate and mean length of runs, breakdown fluency, i.e. duration, frequency and position of filled and unfilled pauses, and repair fluency, i.e. disfluencies such as repetitions, restarts and repairs. Special attention is given to filler words which do not carry semantic meaning themselves, but are most often a sign of speech processing.

3.2 Corpus

There were 11 participants involved in the research, all of whom were students at the first year of Croatian, Serbian and Macedonian Language and Literature at the University of Ljubljana Faculty of Arts Department of Slavic Studies (academic year 2008/2009) with Slovenian as L1 and Croatian as LF. Their task was to participate in an informal discussion on a familiar topic: Student life – advantages and disadvantages. The topic and formal length of the discussion (15 minutes per group) were defined in advance. The participants had an opportunity to discuss the topic a week before the recording in langue practice classes so it can be said that the recorded speech was prepared. There were three participants in each discussion, and the discussion was led by a moderator (also a student) who took care that each participant spoke for the same length of time and who motivated the speakers by asking additional questions. The distance between the speakers was appropriate for a conversation and could be described as personal space or the zone of proxemic distance (45 to 120 cm). The chairs were set up in a circle as a motivation for democratic and cooperative communication. The recording took place in an office at the Faculty, a familiar surrounding for the students, and speech was recorded with a VHS camcorder. The recording was carried out

two times in the interval of two weeks. During the first recording the students discussed the issue in Croatian (LF) and during the second recording in Slovenian (L1).

As was mentioned before, the participants' task was to talk in an informal discussion, which is one of the ways to develop interactive competence, and interaction along with reception, production and mediation, that is, oral interpreting and translating, is one of language activities within CEFRL which helps develop communicative competence. Interaction is described in CEFRL as an activity which includes at least two persons whose communication is based on production and reproduction which alternate and sometimes even overlap. However, the listener usually predicts what the speaker will say once he or she begins to talk and the listener prepares his or her response, which means interaction is far more than learning how to receive and produce an expression – that is why interactive competence is key for successful communication.

According to CEFRL, the participants' language proficiency level of Croatian (LF) is B2+, which means, in terms of interaction, that the speaker can use the language fluently, accurately and efficiently to talk about a wide range of general, academic and business topics or topics relating to leisure, and can clearly indicate relations among ideas. The speaker can also communicate naturally, with a good level of grammatical accuracy, without leaving an impression that he or she must limit him- or herself in what he or she wants to say, using the level of formality appropriate to the situation.

3.3 Methodology

The research consisted of two parts. In the first part, the recorded speech was transcribed and then, using the programme Praat, speech analysis of the recordings was carried out to get speech rate, articulation rate, mean length of runs and the length and number of breakdowns (see figure 1).

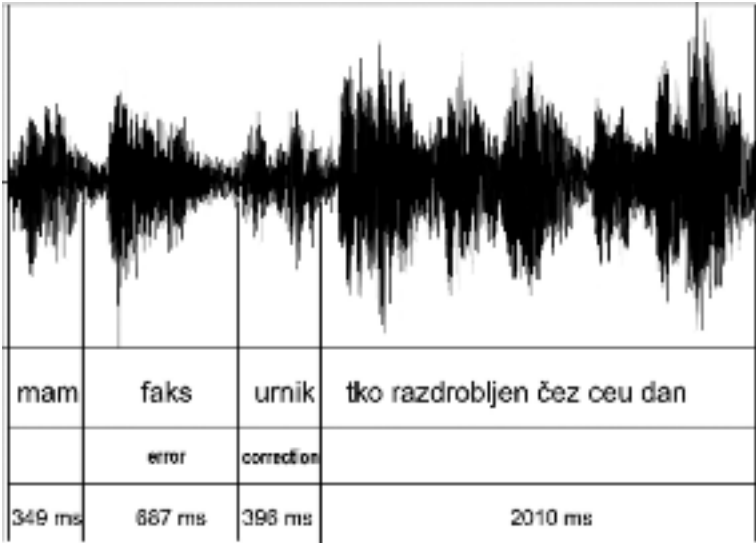| mam	faks	urnik	tko razdrobljen čez ceu dan
	error	correction	
349 ms	667 ms	396 ms	2010 ms

Figure 1. Duration measurment of disfluency (correction) in Praat.

Different classifications of pauses can be found in literature. In this research we classify pauses according to Housen and Kuiken (2009) into two kinds (see Table 1). On the one hand, there are breakdowns which include a. unfilled pauses and filled pauses, which are recognised as vocalised hesitation (*eee*, *em*, *hm*, etc.) or as vocalised lengthening (e.g. connector *i* being pronounced as *i:*). On the other hand, there is a special kind of pause – repair, which includes repeats (whether of a part of a word, of the entire word, or the entire phrase), corrections, reformulations and false starts. As a special kind of non-fluent speech we indicate filler words which do not carry semantic meaning themselves, but rather indicate the thought process going on in the brain during speech, thus they can be defined as time-creating devices. By using the words such as *dobro* 'well', *zapravo* 'actually', *znaš* 'you know', *mislim* 'I think', *samo da pomislim* 'let me think', *koliko znam* 'as far as I know', etc. the speaker does not interrupt speech and thus leaves an impression of fluency. However, overuse of such words is a sign of disfluency.

Pauses			
Breakdowns	Unfilled pause		pač način ... študija in to
	Filled pause	Vocal hesitation	delam eee potem hodim na faks
		Vocal lengthening	hm paa mesečno za autobus je treba plačat
Repairs	Repeat		več ne vem več časa je na splošno
	Correction		k mam faks urnik tko razdrobljen čez ceu dan
	Reformulation		tko da se lahko zdej hm da bi se morala naučit samostojnega dela
	False start		živim u hiši e privat hiši in mi je ušeč k si lahk hm če mi kdaj ne paše grem na bon jest
+ Filler words			sej je fajn mislm tko dost pocen je

Table 1: Classification of pauses.

In the second part of the research, corpus method was used to analyse different types of disfluency in greater detail. For that purpose two specialised electronic corpora have been built: leraner' corpus FLU-CR (3.083 tokens) which includes the speech of participants in Croatian (LF) and the control corpus FLU-SI (4.577 tokens) which includes the speech of participants in Slovenian (L1). The marking of corpus is problem-oriented, which means that only examples of disfluency are marked in the corpus. Marking was done manually, and speech was partitioned into smaller units,

i.e. utterances. Although the analysed sample is relatively small, we believe it is sufficiently representative to indicate tendencies in speech fluency between L1 and LF.

4 RESULTS AND DISCUSSION

As it was mentioned before, the aim of the research was to find differences in oral production between L1 (Slovenian) and LF (Croatian). In the following part of the paper research results are presented.

4.1 Speed fluency

Speed fluency depends on the automatisation of many levels of oral production and speaking skills and it is expressed in terms of speech rate (SR), articualtion rate (AR) and mean length of runs (MLR).

4.1.1 Speech rate (SR)

As can be seen in Chart 1, SR, i.e. the number of syllables spoken per second, including pauses, is somewhat faster in LF than in L1. The speakers utter 2.82 syllables per second in Slovenian and 3.09 syllables per second in Croatian.
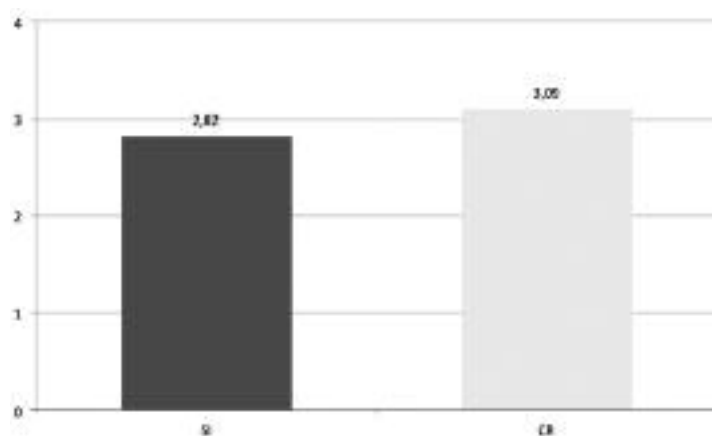

Chart 1: Speech rate in Slovenian (L1) and Croatian (LF)

Similar results in speech rate are found in the research by Požgaj Hadži et al. (2012) in which Slovenian participants read a text somewhat faster in LF (4.7 syllables per second) than in L1 (4.6 syllables per second). The differences were also noted in the research by Horga and Požgaj Hadži (2004) in which SR in LF is 3.8 syllables per second.

The cause of those differences in research results can undoubtedly be found in different types of language activity. Participants have a faster SR in oral production when reading (4.7 sps) and somewhat slower SR when describing (3.8 sps), whereas SR is the slowest in oral interaction (3.9 sps). This confirms the fact that interactive

discourse (informal discussion) alongside oral production also requires other cognitive abilities, which makes the speech slower.

It is interesting to note that SR in L1 deviates significantly from the usual speech of native speakers. According to research by Horga and Mukić (2000), SR in spontaneous speech by native speakers of Croatian on HTV (Croatian national television network) is 4.8 syllables per second. Such difference is most likely the result of the participants' different speaking experience. Although the participants in both studies talk about a known topic, experts are far more experienced speakers when speaking in public is concerned, thus their speech is faster and more complex. On the other hand, students have not as yet acquired such speaking experience and, unfortunately, the education system does not pay sufficient attention to the issue and hence does not provide enough opportunities for practicing various oral interactions.

4.1.2 Articulation rate (AR)

Similarly, articulation rate (AR), i.e. the number of syllables spoken per second, excluding unfilled pauses, is somewhat slower in Slovenian (3.33 sps) and faster in Croatian (3.76 sps) (Chart 2).
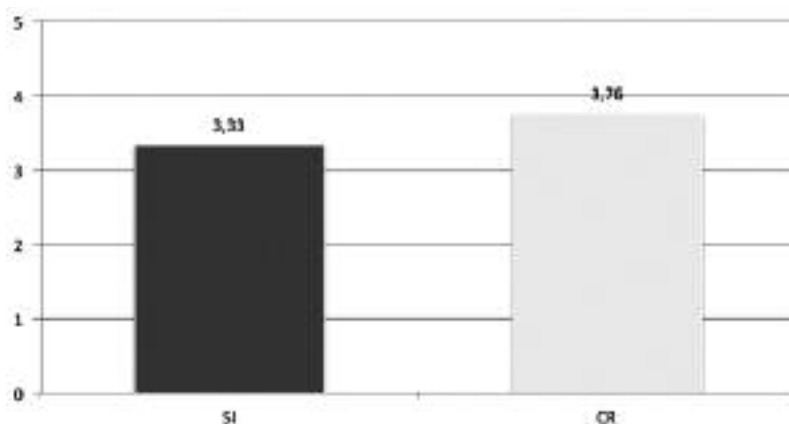

Chart 2: Articulation rate in Slovenian (L1) and Croatian (LF)

This means that in the research Slovenian participants articulate more slowly when speaking L1 and faster when speaking LF, which is surprising. Such results might be influenced, on the one hand, by jitters because it was the participants' first recording of that kind, and on the other hand, by the lack of motivation in the second recording (L1) because they were discussing the topic for the second or the third time. Answers to these questions can only be found by conducting further research.

4.1.3 Mean length of runs (MLR)

However, if we look at mean length of runs, i.e. an average number of syllables spoken between two pauses regardless of semantic and syntactic criteria of expression setup, in L1 and in LF, the case is reverse. MLR in Slovenian is significantly longer (2.46 s) than in Croatian (1.8 s) (see Chart 3).
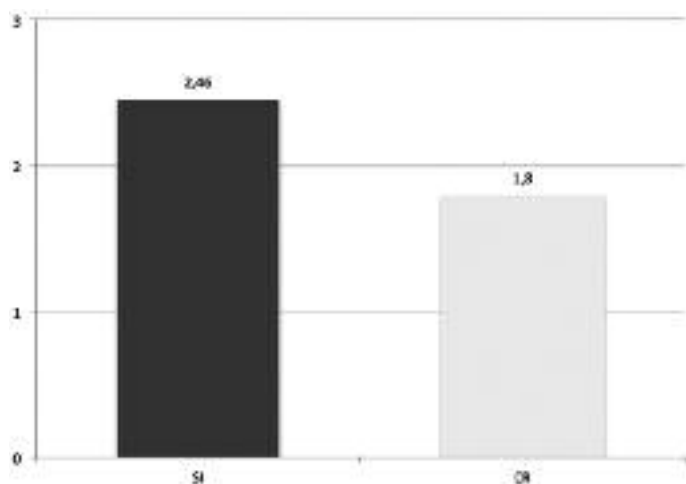

Chart 3: Mean length of runs

Similar results appeared in research by Požgaj Hadži et al. (2012) in which participants reading a text in L1 achieve an MLR of 2.0 seconds and in LF an MLR of 1.7 seconds.

It is interesting to note that MLR in L1 matches MLR found in the research by Horga and Mukić (2000) which showed that there is a difference between male and female speakers. Male speakers have an average MLR of 1.64 s, whereas female speakers have an MLR of 2.87 s.

4.2 Breakdown fluency

Breakdown in speaking is described as an unfilled pause expressed as silence or a filled pause expressed as a vocalised hesitation (*eee*, *em*, *hm*, etc.) or vocalised lengthening where in most cases the last sound in the word is lengthened, most often the vowel (*pa:*, *i:*, etc.). A question arises as to what can be considered a breakdown. Different studies have different values of breakdowns; our research identifies a pause as a breakdown lasting at least 0.2 to 0.25 seconds.

4.2.1 Breakdown duration

As can be seen in Chart 4, average pause duration (filled and unfilled) is 0.63 s in Slovenian and 0.68 s in Croatian. It can be concluded that the results indicate a tendency for somewhat longer pauses in LF than in L1, which was not confirmed by the research of Požgaj Hadži et al. (2012).
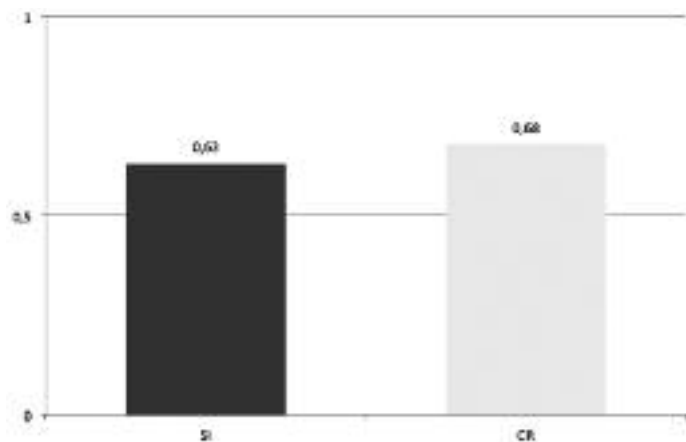
Chart 4: Breakdown duration

It is interesting to note that pauses are significantly shorter when the text is read – in Slovenian participants the duration of the pauses is 0.45 s when reading a text in L1 and 0.43 s when reading a text in LF (Požgaj Hadži et al. 2012).

4.2.2 Number of breakdowns

Whereas the number of unfilled pauses in both languages is approximately the same, i.e. 16.35 per minute in L1 and 16.61 per minute in LF, there are a lot more filled pauses in LF than in L1. In Croatian, there are 11.93 filled pauses per minute and in Slovenian there are 8.38. The results can be seen in Chart 5.
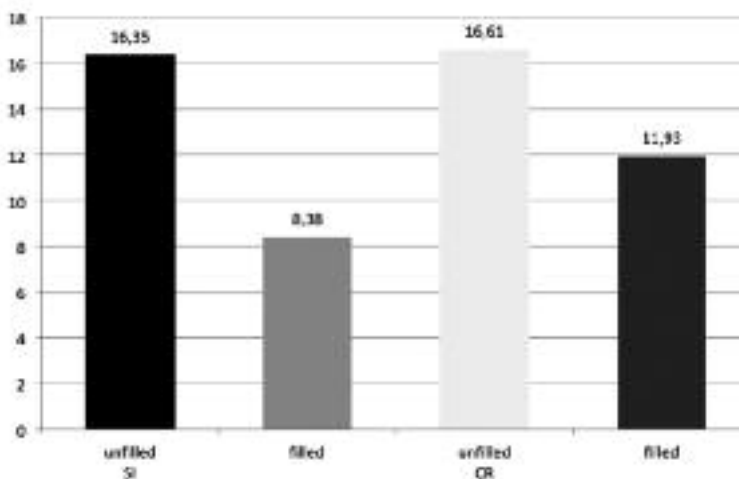

Chart 5: Number of pauses (filled and unfilled)

4.3 Repair fluency

According to Nooteboom (1980), oral production is largely subject to refinement during production, although speakers repair only 50% of errors they make. However, repair does not necessarily mean there is an error – it can be one of the forms of disfluency when the speaker hesitates because he or she needs more time for further planning of speech and speaking. Repair is carried out by various means. In our research the most frequent type of repair is repetition, then reformulation, false start and correction.

4.3.1 Number of repairs

The number of repairs is also somewhat higher in LF than in L1. There are 3.96 such pauses per minute in Slovenian and 4.72 such pauses per minute in Croatian (Chart 6).
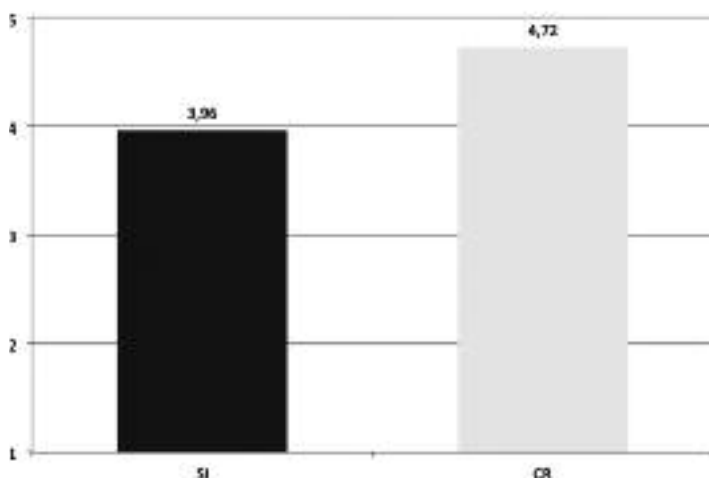

Chart 6: Number of repairs per minute

Higher number of repairs in LF was confirmed in previous studies. When reading texts in L1 there are on average 23 repairs per minute and in LF 26 repairs per minute (Požgaj Hadži et al. 2012), whereas in spoken texts of Slovenian participants there are 32.9 repairs per minute in LF, or almost every 2 seconds (in our research 33.26 in LF and 28.96 in L1), which is significantly more than 7.6 repairs per minute in spontaneous speech on the radio (Horga/Požgaj Hadži 2004).

A more detailed frequency of filled pauses was calculated in corpus analysis (Table 2).

Type of pause	FLU-SI No./min	No. of particip.	FLU-CR No./min	No. of particip.	Difference SI:CR
Repeats	2.3	10	2.25	9	- 0.05
Correction	0.36	4	0.68	6	+ 0.32
Reformulation	0.63	6	0.95	6	+ 0.32
False start	0.67	6	0.84	7	+ 0.17
total	3.96		4.72		

Table 2: Average frequency of filled pauses per minute

As can be seen in Table 2, when speaking in LF the participants use somewhat less repeats and somewhat more other forms of repairs.

4.4 Filler words

The biggest difference between L1 and LF speech was noted in using filler words. When speaking Slovenian (L1) the speakers use 8.53 filler words per minute and when speaking Croatian (LF) they use only 1.31 filler words (Table 3).

Type of pause	FLU-SI No./min	No. of particip.	FLU-CR No./min	No. of particip.	Difference SI:CR
Filler word	8,53	11	1,31	10	- 7,22

Table 3: Filler words

It is interesting to note that when describing a picture in LF Slovenian participants used 8.4 filler words per minute (Požgaj Hadži et al. 2012), which is almost the same result that we got in this research. However, it is important to note that the participants from previous research were at the second and third year of study, and were at a higher level of language proficiency.

5 CONCLUSION

The aim of our research was to find an answer to the question to what extent speech fluency depends on language proficiency. To find the answer, we compared the speech of the participants in L1 (Slovenian) and in LF (Croatian). Chambers (1197: 541) points out the following differences in speech fluency between L1 and LF: a. the frequency of pauses rather than the length; b. the length of run; c. the place of pauses in an utterance; d. the transfer (or not) of pausing pattern from L1 to LF. In this research we primarily explored the first two, that is, the length and frequency of pauses, mean length of runs and speech and articulation rate. It was shown that there are no

significant differences in the rate of speech and articulation between L1 and LF. However, speech rate in LF is different in different discourse types. The more complex the discourse, the shorter the speech rate (reading 4.7 sps, description 3.8 sps, discussion 3.09 sps). Values of mean length of runs confirm that speech in L1 is more fluent because it is 1.36 seconds longer than in LF. Therefore, we can conclude that speech fluency is primarily influenced by the speaker's language proficiency, but cognitive abilities are also important.

As for pauses, the difference in the length of breakdowns and the frequency of unfilled pauses and repairs between L1 and LF is almost non-existent, whereas unfilled pauses are more frequent in LF (+ 3.55 pauses per minute). Most differences are found in the use of filler words that appear in L1 7.22 more times in a minute than in LF. Based on the results from the research we can agree with the assumption that "becoming fluent therefore is not about speaking faster (articulation rate), but about pausing less often and pausing at the appropriate junctures in an utterance" (Chambers 1997: 540).

Difference in speech fluency between participants in the research and professional speakers point to the problem of education where insufficient attention is paid to the issues of fluency and acquisition of more demanding language activities, such as interactive discourse. Such language activities require more than just knowing the language, thus they should be incorporated into curricula of first and foreign languages. As Kormos and Dénes (2004: 160) point out, "if the aim of language teaching is to help students to become fluent speakers, both exercises that prompt students to express their communicative intent within the limited time-constraints of real-life interactions and those that promote accuracy should be applied." Those are primarily exercises which encourage speakers to engage in independent oral production, such as discussions and debates, games, simulations, role-plays, etc., in which speech fluency comes before accuracy.

The research has left many questions unanswered. First of all, it is important to look into where the pauses appear especially because the research confirmed the fact that "what distinguishes native and non-native pausing is more likely to be *where* pauses occur rather than *that* they occur" (Skehan 2009: 513, according to Davies 2003). Furthermore, it would be interesting to find out what is considered fluent speech, that is, how speech fluency is evaluated in first and foreign language teaching. If we look at the descriptors for speech fluency in CEFRL, we can see that they are too general. Successful evaluation in teaching would certainly require some time parameters, such as speech rate, mean length of runs, etc.

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Abstract

SPEECH FLUENCY: A RESULT OF ORAL LANGUAGE PROFICIENCY?

The aim of this paper is to answer the question of the influence of language proficiency on speech fluency in relation to speakers' other cognitive abilities by comparing the speech of research participants who speak Slovenian as L1 and Croatian as LF. By using the method of acoustic and corpus analysis, the values of speech rate, articulation rate, mean length of runs and the length and frequency of certain pauses are presented.

Keywords: oral language proficiency, speech fluency, speech rate, pauses, filler words.

Povzetek

GOVORNA FLUENTNOST: REZULTAT GOVORNE JEZIKOVNE ZMOŽNOSTI?

Na primeru govorcev slovenščine kot prvega in hrvaščine kot tujega jezika poskušamo v prispevku odgovoriti na vprašanje, koliko na govorno fluentnost v tujem jeziku vpliva stopnja znanja tujega jezika, koliko pa nanjo vplivajo druge kognitivne sposobnosti govorca. Z metodologijo akustične in korpusne analize so bile v raziskavi izračunane vrednosti časovnih parametrov hitrosti govora, hitrosti izgovora, trajanja govornega bloka in trajanja disfluentnosti ter frekventnosti pojavitev posameznih vrst disfluentosti.

Ključne besede: ustno znanje jezika, govorna fluentnost, hitrost govora, premori, mašila.