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Guest editors:
Mirjana Mišković Luković
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ФИЛУМ
Филолошко-уметнички факултет Крагујевац
Faculty of Philology and Arts Kragujevac

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Tatjana V. Paunović[1]
University of Niš,
Faculty of Philosophy

PITCH HEIGHT AND PITCH RANGE IN SERBIAN EFL STUDENTS' READING AND SPEAKING TASKS[2]

The use of prosodic/intonational cues in spoken communication is attracting growing attention from both theoretical and research perspectives, which is particularly important for L2 teaching, where the appropriate use of prosodic cues is a vital communicative goal. In EFL study, the prosodic cues related to F0 and pitch range manipulation, used as markers of various intonation functions, are particularly important. In this paper, we present a study involving first-year English Department students and their use of F0-related prosodic cues – pitch range, pitch level, and movement – in reading and speaking tasks. The findings showed that EFL students used pitch-related cues appropriately to signal unit boundaries and prosodic prominence, while for interactional and illocutionary signals the use of both pitch range and pitch contours was much less appropriate. The pitch range used for reading dialogues was only slightly higher but not wider, and the participants neither expanded the pitch range for focused utterance parts, nor did they compress the pitch range for backgrounded and parenthesised parts. The reading task proved to be more challenging than speaking in some aspects, but the participants used a narrower, mid-level pitch range in speaking, as well as inappropriate, rising pitch contours.

Key words: intonation, prosodic cues, F0, pitch range, key, pitch height, pitch movement, Serbian EFL students

1. INTRODUCTION

Encouraged by the shift of focus from language as a system to communication as a process unfolding in complex real-life interactions, prosody and, particularly, intonation seem to attract more and more interest in recent years. Still, despite the undisputed theoretical and empirical advances, prosody remains a sore point in both theory and teaching practice. Firstly, many authors do not keep a clear delimitation between intonation in the narrow sense (F0/pitch variation, e.g. Hart *et al* 1990: 10) and in a broader sense, including some accompanying prosodic cues (duration, loudness, pauses, segmental lengthening/shortening and strengthening/weakening; cf. Nooteboom 1997). Secondly, no theoretical model of intonation accounts for the *interaction* of all its various functions. Thirdly, although various aspects

1 tatjana.paunovic@filfak.ni.ac.rs

2 The research presented here is part of the project No 178002, run by Professor Snežana Gudurić, and supported by the Ministry of Education, Science and Technological Development of the Republic of Serbia.

of intonational phenomena are now included in research, a unified theoretical system of formal symbolic representation of intonation that would encompass all the relevant aspects of its realisation is still missing. Furthermore, there is a fundamental disagreement about what theory and empirical research should focus on – the form, i.e. the symbolic representation of intonation, or the phonetic realisation of prosodic cues, or the functions, i.e. the pragmatics of intonation.

From the perspective of foreign language study, there is an additional problem of translating theoretical and research developments into language classroom practice. Grice and Bauman (2007: 25), for instance, warn that it is very difficult for teachers to apply research findings even when they are well-informed about them. That is precisely why, proposing Discourse Intonation (Brazil 1997) as a framework readily applicable in classroom practice, Chun (2002) deliberately sets aside the theoretical differences and focuses on intonation functions and the prosodic cues used to encode them. She stresses that intonation is essential to communication, and therefore for foreign language teaching (Chun 2002: xiii), since prosodic aspects of speech have been empirically shown to be vital for speech intelligibility (cf. Munro *et al* 2006, Watson and Schlauch 2008). That is also why Gut *et al* (2007: 5) suggest that an 'intermediate step' is necessary – the research with EFL students based on classroom practice, which would provide an 'essential link' between theory and teaching practice in L2 prosody (Gut *et al* 2007: 16).

2. *FUNCTIONS OF INTONATION*

The coherent variations of pitch, usually conjoined with other prosodic features (i.e. loudness, stress, segment duration, vowel quality and pause), realized over units referred to as intonational phrase (Ladefoged 2001), intonation phrase (Wells 2006), intonation unit (Barth-Weingarten 2007, Chafe 1988, Du Bois 1991), intonation group (Cruttenden 1997), tone unit (Brazil 1997, Crystal 1969), or tone group (Brown *et al* 1980, Halliday 1967), are commonly agreed to be shaped not only by the factors of prominence or accent, but also by communicative factors such as "the intended illocutionary force of an utterance", and what the speaker considers to be new or presupposed information (Chelliah and de Reuse 2011: 273).

In more traditional descriptions, however, such as Gimson's (1970), intonational functions are broadly categorised as accentual and non-accentual, the former being given primacy, while the most important non-accentual function is the most narrowly grammatical one – distinguishing a statement from a question (Gimson 1970: 266). While a speaker's intonation "might reveal a patronizing attitude to the listener, an incredulous attitude to the topic or a querulous disposition" (Gimson 1970: 267), and this may have a communicative function in a community, non-accentual intonation patterns are not a part of this theoretical description, "since they evade systematization" (Gimson 1970: 267).

In more recent overviews, more attention is paid to intonation functions related to discourse structure and pragmatics. For instance, Roach (1991) distinguishes between attitudinal, accentual, grammatical, and discourse intonation functions, this last one including signalling new information, a link with another tone-unit, or what kind of response is expected (Roach 1991: 163), as well as focusing attention and regulating conversational behaviour (Roach 1991: 177–178). Roach even concludes that "practically all the separate functions traditionally attributed to intonation (attitudinal, accentual and grammatical) could be seen as different aspects of discourse function" (Roach 1991: 179).

The same idea guides Chun (2002), who distinguishes between four intonation functions: *grammatical* (signalling grammatical structure and structure boundaries, after Crystal 1969), *attitudinal* or *emotional* (a "cognitively monitored expression of attitude", after Couper-Kuhlen 1986: 174), *sociolinguistic* (expressing age, sex, socio-regional and occupational groups) and *discourse function*. Chun focuses particularly on the discourse and pragmatic, i.e. 'interactional' functions (Chun 2002: 42), grouping together a whole range used "for the purpose of achieving continuity and coherence within a discourse" (Chun 2002: 56), such as: *marking information structure* (sentence-level focus, emphasis, contrasts and new vs. given information), *illocutionary/speech-act functions* (the speaker's intentional force), *textual/ discourse functions* (coherence, shared knowledge, discourse-level prominence, discourse boundaries and the speaker's expectations about the hearer's reply) and *interactive/discourse functions* (topic continuation/change, discouraging the hearer from replying, showing cooperation and facilitating repair).

Similarly, Vaissière (2004) categorizes intonation functions as: *syntactic* (continuous speech segmentation, e.g. prosodic words, syntagmatic units, propositions, utterances and paragraphs), *informational* (informational segmentation, e.g. theme/rheme, given/new information and focus/ parenthesis), *interactive* (regulating the speaker-listener interaction, e.g. attention-getting, arousal, turn taking/holding the floor and topic end/ continuation), *modal* (communicative intention, e.g. assertions, questions and orders), *attitudinal* (e.g. doubt, disbelief, politeness and irony), *emotional* (e.g. joy and anger), *speaker-identifying* (e.g. identity, sex, age, physiological state, regional varieties, stylistic variations and sociocultural background) and *other*, related to "prosodic continuity, intelligibility, lexical access, memory and recall" (Vaissière 2004: 237). Indeed, the use of prosodic cues to signal discourse and pragmatic information is considered to be highly significant in most contemporary research on discourse structure and spoken interaction. Researchers focus on both the affective 'meanings' of intonation (Wichmann 2000, 2002) and on the pragmatic, interactional, and discourse use of prosody (Wennerstrom 2001, 2003). Szczepek Reed (2010: 196) points out that in discourse-related approaches most attention is paid to the prosodic form of discourse-unit boundaries, while in interaction-oriented approaches there is a greater interest in the internal phonological structure of the intonation phrase as a holistic category.

Prosodic cues that interact to perform these various functions of intonation include, according to Vaissière (2004: 239), *short-ranged local cues* (e.g. juncture tone), *semi-global cues* (e.g. resetting of the baseline in a part of the utterance) and *global cues* (e.g. declination, pitch range, pitch register and rate of speech, over an entire utterance). All these cues – local and global – interact. They are perceived in an integrated way in the listener's interpretation of the utterance. Furthermore, the perception of intonation cues depends on the context in which they occur: the *intrinsic* context (e.g. F0 is inter-dependent with duration, loudness, vowel and consonant quality, Lehiste 1970) and the *cointrinsic* (melodic) context (Vaissière 2004: 242).

Interest in discourse, pragmatic and interactional functions of prosody is common to most contemporary research. For instance, in addition to *highlighting* and *phrasing*[3], intonation in spoken language "serves diverse linguistic and paralinguistic functions, ranging from the marking of sentence modality to the expression of emotional and attitudinal nuances" (Grice and Bauman 2007: 26, 31–32). These include signalling information structure (given vs. new or focus vs. background, Grice and Bauman 2007: 34) and encoding speech act distinctions (communicative illocutionary acts). *Frequency code* (proposed by Ohala (1983, 1984) and elaborated by Gussenhoven (2004)), according to Grice and Bauman (2007: 39–40), may have *affective* (e.g. dominant-submissive and impolite-polite) or *informational* interpretations (e.g. certain-uncertain and assertive-questioning), "with low pitch attributed to the first pole and high pitch to the second" (Gussenhoven 2004: 80–84).

From the standpoint of L2 teaching, particularly important is the need to identify and observe the differences between the native and target languages in terms of signalling various aspects of information structure and speech acts (Grice and Bauman 2007: 37). However, in addition to problems that can be ascribed to L1 transfer, L2 students' difficulties may arise from their not being aware of the pragmatic and discourse prosodic signals in L2. This is important for their ability to appropriately express what they want, but also to interpret the intended meanings in what they hear, instead of "attributing unexpected intonation patterns as (solely) a function of the attitude or emotional state of the speaker" (Grice and Bauman 2007: 37).

2.1. Previous research

Empirical research studies of EFL learners' production or perception of English intonation are not very numerous, but they point to some common problems faced by students of different L1 backgrounds. Mennen (2006, 2007) reviews the findings of several such studies, and summarises their findings as a list of potentially problematic prosodic cues for EFL learners. The first problem she highlights is the use of a narrower pitch range, in addition to problems

3 *Highlighting* and *phrasing* are two main functions of intonation: the former expresses utterance-level prominence (much like Wells' (2006) notion of *tonicity*); the latter relates to dividing and delimiting chunks in speech (in line with Wells' (2006) notion of *tonality*).

with prominence placement. Of the more global prosodic cues, the findings indicate problems with the reset after a boundary, and a smaller declination rate. Problems with pitch contours include the use of rises instead of falls and vice versa, wrong (too high) pitch level on unstressed syllables, wrong pitch movement over unaccented syllables preceding a fall (no gradual rise), and problems with the final pitch rise, either because it is too high (overshot) or because it is too low (Mennen 2007: 55). Mennen stresses the fact that many of the problems highlighted in these studies were similar with EFL students of different L1 backgrounds, although L1 transfer also plays an important role, especially in the use of pitch range or pitch alignment (Mennen 2007: 63).

EFL learners' intonation problems were investigated by Wennerstrom (1994), who compared how Spanish and Japanese as well as Spanish, Japanese and Thai learners used intonation to structure discourse, to signal new information and tone unit boundaries. Her findings showed that all the participants (to a varying degree, though) had problems with using appropriate pitch height to signal new (vs. given) information, and that particularly Thai and Japanese participants had problems signalling boundaries, as well.

Finnish EFL speakers investigated by Toivanen (2003) had problems with those pragmatic contexts that required a fall-rise tone; they were found to use falling tones inappropriately in relation to the intended pragmatic and communicative functions (uncertainty, continuation and reserve). In Toivanen and Waaramaa (2005), Finnish-English speakers' intonation was observed in terms of tone, key and termination; this study also revealed that while the falling tones were predominant, rising tones were 'virtually absent' in dispreferred turns.

Ramirez-Verdugo (2005) investigated the use of prosodic cues for pragmatic functions with Spanish EFL learners, focusing particularly on expressing certainty in English tag-questions. Her participants used a falling pitch where inappropriate, as well as a narrower pitch range. Uncertainty was signalled by inappropriate, falling or mid-level tones, instead of a complex fall-rise. The way Spanish learners use prosodic cues to signal focus, compared to native English speakers, was studied by Ramirez-Verdugo (2006). The participants showed remarkable differences from native speakers, specifically, a narrower pitch range for narrow focus, and the location of the nuclear pitch accent in contrastive focus.

Using a narrower pitch range was also one of the problems Komar (2005) identified with Slovene EFL learners. She studied students' use of pitch level, pitch range and pre-tonic segments; in addition to problems with the pitch range, the participants used inappropriate pitch movement over the syllables preceding the accented one.

Conducted with pedagogical implications in mind, the study by Rocca (2007) investigated the intonation of Brazilian EFL students and concluded that acoustic analysis should be used to identify those L2 features that students cannot correctly perceive or produce. This, says Rocca, should be the basis for the construction of teaching materials that would particularly rely on the identification of "pauses, pitch accents and patterns of pitch accents" (2007:

425). Her proposal for L2 intonation teaching involves the use of the computer screen for the visual representation of pitch patterns (2007: 428).

Busà and Urbani (2011) specifically compared the production of pitch range in English as L1 and L2, as produced by British English speakers and Northern German speakers (following the line of research of Mennen *et al* (2007, 2008)). They found that L2 speakers' pitch range was indeed narrower, and with less pitch variation. The authors conclude that this may result from a lack of proficiency in L2, rather than from the prosodic differences between the speakers' L1 and L2 (2011: 381).

With Serbian EFL students, the suprasegmental properties of speech have long been neglected by researchers. How Serbian EFL students use prosodic cues to signal discourse and pragmatic functions of intonation was explored by Paunovic and Savic (2008), particularly the prosodic cues signalling discourse topic structure (Paunovic 2013), and pragmatic functions related to the pragmatic expression of polite requests, apologies, and refusals (Savic 2014). One of the reasons for this lack of empirical research into Serbian EFL students' intonation may be the fact that, apart from the fundamental descriptions by Lehiste and Ivic (1986), there are only a few more recent empirical studies of the suprasegmental properties of Serbian as L1, and of the ways in which prosodic cues are used in Serbian to encode intonational functions (Kašić 2000, Smiljanic 2003a, 2003b, 2004, 2006, 2007), particularly discourse functions, such as signalling contrast or focus.

3. *PRESENT STUDY*

3.1. Aims and questions

The study presented here focused on Serbian EFL students' use of prosodic cues in order to identify the areas in which the students' performance in reading and speaking would differ significantly from the expectations set by the research and theoretical descriptions of English intonation. The study aimed at investigating the use of phonetic cues to signal pragmatic and discourse information, relying primarily on the intonational functions described by Chun (2002) and Vaissière (2004), and the use of phonetic cues highlighted by previous research.

Specifically, we focused on four intonation functions:

1. phrasing (signalling boundaries): initiality, finality and continuity;
2. marking information structure: new/given, focus/background, parenthesis and contrastive narrow focus;
3. interactive functions: topic, turn, conversation end, continuation and new topic;
4. 'speech act' or illocutionary functions: seeking information or confirmation, expressing doubt or uncertainty and showing assertiveness/non-assertiveness.

The phonetic cues focused in this research were pitch range/span (key) and F0/pitch level or pitch height, within tone units and at tone unit boundaries.

3.2. Methodology and procedures

The participants were six English department students at the Faculty of Philosophy (University of Niš). They were first-year students (average age 19.3, proficiency level roughly B1-2 CEF, three male and three female students) just starting their introductory course in *English Phonetics and Phonology*.

For data gathering, we devised two different tasks. Task one consisted in reading aloud the slightly adapted *Story of Arthur the Rat* (Sweet 1890), which provided a tightly structured context for the use of prosodic cues and intonation. Task two consisted in retelling the story from memory, that is, in producing 'semi spontaneous' speech (Markham and Hazan 2002) as the closest equivalent to spontaneous speech in experimental contexts. This choice of tasks made it possible to compare the use of the same phonetic cues in two different communicative contexts.

Each participant's performance was recorded digitally, using the Phillips SBC MD650 microphone, directly into the Speech filing System (SFS 4.7/ Windows 2008, © M. Huckvalle, UCL). The analytical procedures included standard acoustic measurements of F0 level, F0 range or span (in Hz and semitones, Nooteboom 1997: 645, Nolan 2003: 774) and F0 movement direction (F0 contours through three program procedures: F0 track, F0 estimate and F0 autocorrelation).

It has been widely accepted that pitch range can be measured and compared according to two dimensions: *level* (referring to the overall pitch height or register (or key)) and *span* (i.e. the range of frequencies in a speech unit). However, these long-term distributional (LTD) measures (i.e. the mean/ median F0 for level and maximum-minus-minimum F0 for span) might not be sufficient for cross-linguistic comparisons since different points within prosodic/intonational units of speech are differently marked across languages. That is why alternative 'linguistic' measures have been proposed taking into account specific linguistically determined points in the F0 contour (cf. Busà and Urbani 2011, Mennen *et al* 2008, 2012, Patterson 2000) as they seem to have a better correlation with perceptual judgement (Patterson 2000, Mennen *et al* 2012). In terms of pitch range, however, we have opted for the traditional LTD measures and standard statistical procedures (i.e. speaker and group mean, median and standard deviation).

What follows is a qualitative summary of the quantitative findings, illustrated by individual students' performance examples and compared to previous research observations.

3.3. Results and discussion

3.3.1. Phrasing: signalling boundaries, delimiting relevant units, discourse boundaries

Our participants generally produced the best results in terms of the tonality or phrasing function of intonation, namely, when signalling boundaries and delimiting discourse parts (e.g. text paragraphs and narration from dialogue), utterances and intonation units.

For signalling **initiality** (e.g. the beginning of a paragraph, sentence or discourse segment), previous research established the prosodic cues of resetting of the baseline (Mennen 2007, Vaissière 2004) and the use of an 'initial rise' (Vaissière 2004). Our participants signalled initiality by using high pitch/F0 at the beginning of a unit – the first pitch peak. However, although the pitch height signal could be said to have been used appropriately for signalling a new part in discourse, initiality was marked by high falls or high level tones rather than rising tones.

Furthermore, the use of a high pitch peak has been shown to be insufficient to delimit discourse units larger than a sentence (e.g. new discourse topic, new paragraph, the beginning of a dialogue, etc.). More important, however, is the F0 difference between the previous (unit-final) pitch and the F0 at the beginning of a new unit. In this respect, the majority of our participants did use pitch differences to signal new discourse units; for instance, the first two paragraphs of the text were narrative, while the third paragraph marked the beginning of a dialogue in the text, which should have been signalled by a notable increase in the F0 at the beginning of paragraph 3.

	Paragraph-final F0 Hz	New paragraph F0 Hz	F0 diff. Hz	Semitones
Paragraph 1 – 2	141	306	**165**	**13**
Paragraph 2 – 3	94	267	**173**	**18**

Table 1. Average values for female participants S2, S4 and S5 – the difference in F0 (in Hz and semitones) between the paragraph-final and paragraph-initial pitch height for paragraphs 1 and 2 in the text (narrative), and paragraphs 2 and 3 (the end of the narrative and the beginning of the dialogue part).

Indeed, as shown in *Table 1* above, which gives the average F0 values in Hz and semitones for the three female participants, the participants used the high pitch signal, but the difference between the unit-final pitch of the narrative part of the text and the unit-initial pitch of the dialogue part of the utterance was only slightly greater than the paragraph-delimiting differences within the same text-unit (narrative, paragraphs 1 and 2). It is questionable whether this difference may be regarded as a sufficient delimitation signal of discourse-unit initiality and is, therefore, subject to further investigation which would focus on perception, evaluation and intelligibility/comprehensibility.

For signalling **finality** (i.e. the end of a paragraph, sentence or discourse part), previous research established the prosodic cues of F0 fall, lowered F0 contour (Chun 2002, Vaissière 2004) together with sentence declination (Chun 2002: 44, Vaissière 2004) and the phenomena of downstep and downdrift (Lehiste 1979, Vaissière 2004). This was profusely documented in many languages, including English. Our participants used these signals almost invariably, in both reading and speaking, to signal syntactic units at the sentential level. To signal discourse-unit finality (e.g. the end of a paragraph or discourse topic), these were frequently coupled with a very low F0 fall ending in a creak/laryngealization (Johns-Lewis 1986). *Figure 1* illustrates this, showing the participant S1 (male) using low falls to signal sentence-ending in the first paragraph of the reading task, the end of the paragraph being signalled by a very low F0 value at the end of the fall, ending in a creak.

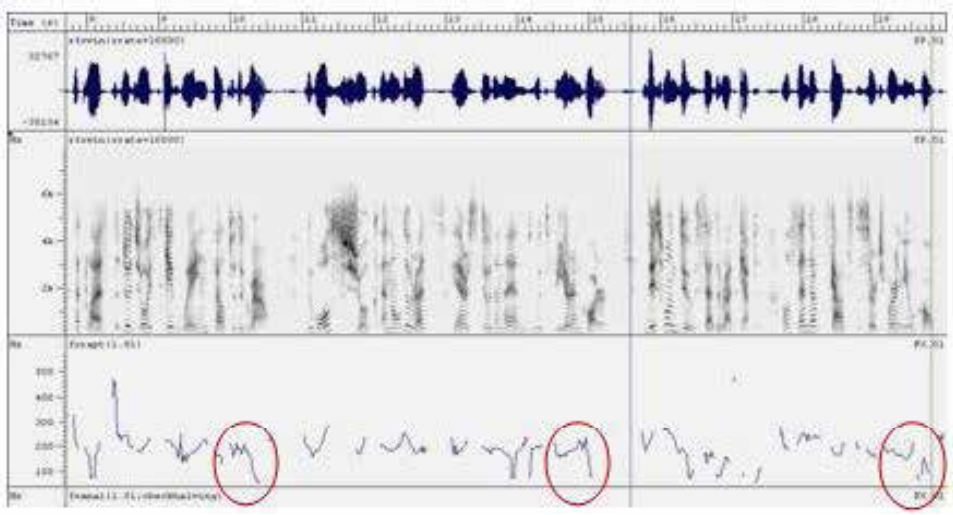

Figure 1. The use of low F0 fall by participant S1 (male) to signal the end of three sentences and the end of the first narrative paragraph, where the fall ends in a creak.

For signalling **continuing transitions**, previous research established the use of the prosodic cues of "a slight rise, a level tone, or a very slight fall" (Du Bois *et al* 1993). In both the reading and speaking tasks, our participants invariably signalled continuation by rising tones, more prominently rising in reading than in speaking. *Figure 2* illustrates this by showing notable F0 rises in the three intonation units constituting a string within a sentence ("*a horse named Nelly, a cow, a calf...*") produced by participant S6 (male) in the reading task.

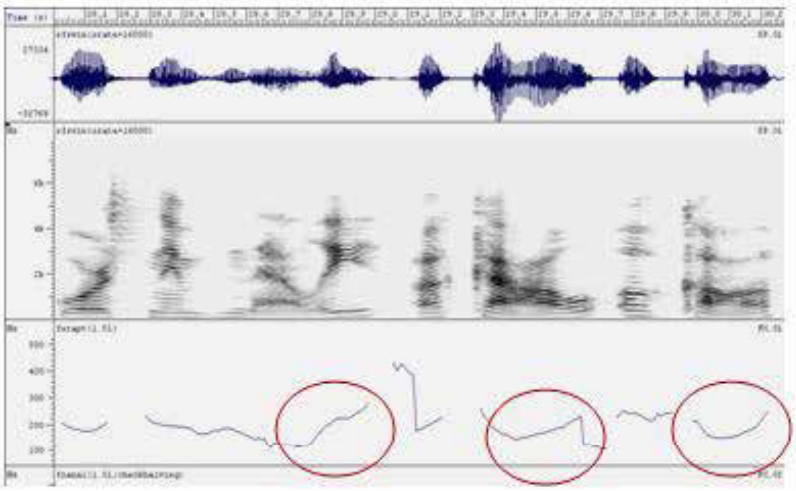

Figure 2. F0 rises signalling a continuing transition in three intonation units within a sentence: "a horse named Nelly, a cow, a calf...", produced by participant S6 (male) in the reading task.

Continuing transitions between sentences in the same paragraph were invariably signalled by falling tones, the continuation being marked only by the overall downstepping trend (i.e. the F0 height of the fall was progressively lower for each consecutive sentence in a paragraph and each sentence-initial F0 peak was progressively lower). The fall-rise tone for signalling continuation of a discourse topic or conversational turn-taking (Toivanen 2003) was not attested in our data.

In the speaking (retelling) task, with more fluent students, the F0 contours showed the same pattern of declination within sentences, with somewhat less pronounced downstep within larger discourse units (paragraphs). However, finality-signalling contours were very often substituted by inappropriate rising transitions, signalling continuity instead of finality at the end of an utterance/sentence, as illustrated in *Figure 3*. Moreover, in the speaking task the contours were too often broken by longer pauses and hesitations, occasionally empty or filled by pause-fillers (e.g. *hmmm*, *er*, etc.) or by a mid-level tone, as illustrated in *Figure 4* below.

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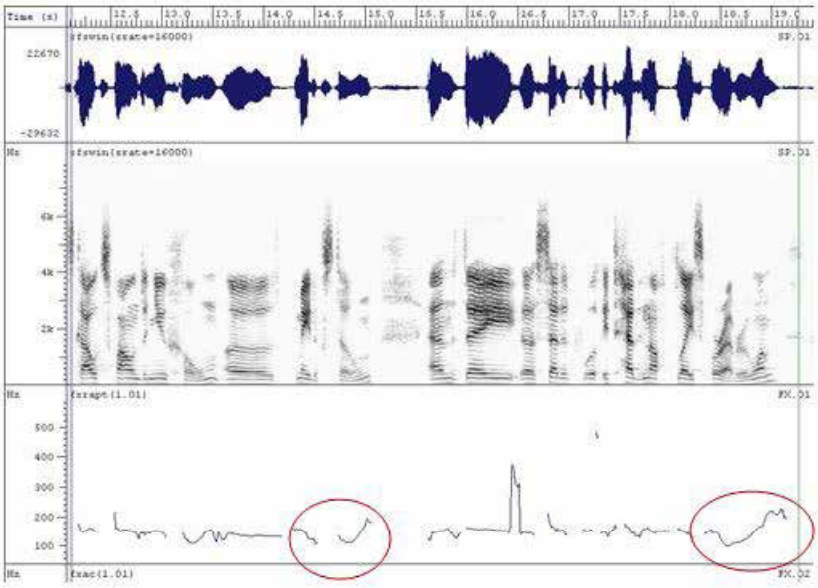

Figure 3. Rising F0 contours used by S5 (female) at the beginning of the speaking task (story retelling) instead of F0 falls to signal finality at the end of an utterance.

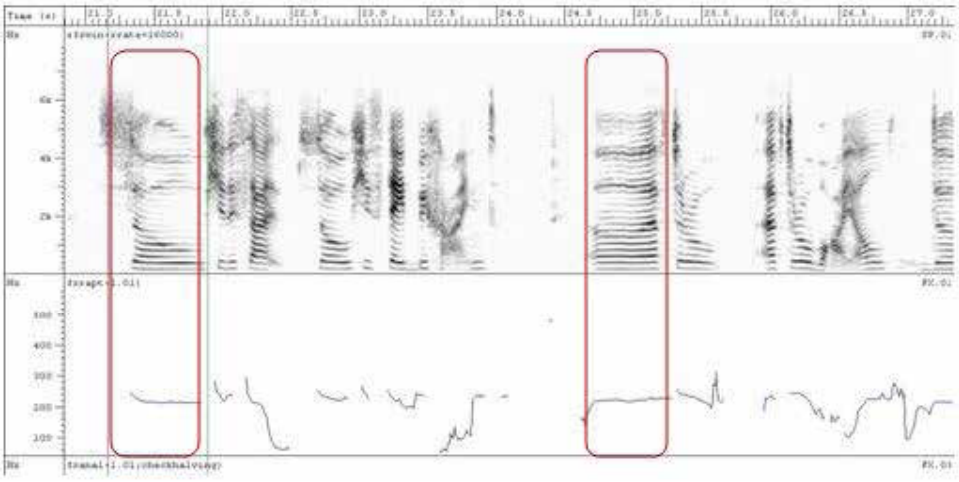

Figure 4. The beginning of the speaking task (story retelling) produced by S1 (male), illustrating long pauses filled by a mid-level tone (*er*).

Regarding the prosodic cue of **pitch range** used for the phrasing function, our participants did not use a wider pitch range in the dialogues compared to the narrative parts of the text, contrary to empirically established differences typical of English (Chun 2002: 37). The pitch range used in the reading task for the dialogue was indeed higher than that of the narrative, in terms of *level*, but not wider in terms of *span*, as shown in *Table 2*, which sums up the average pitch range values for the six participants, showing the average values of the pitch span in Hz and semitones for the two paragraphs of the narrative as well as for the dialogue.

	Pitch range in Hz	Span in Hz	Pitch span in semitones (ST)
Narrative, Paragraph 1	54 Hz – 327 Hz	273 Hz	31
Narrative, Paragraph 2	62 Hz – 293 Hz	231 Hz	27
Dialogue	107 Hz – 275 Hz	168 Hz	16

Table 2. Average values of the pitch range used by the six participants in the narrative part of the text in the reading task (paragraphs 1 and 2) and the dialogue part of the text, in Hz and semitones.

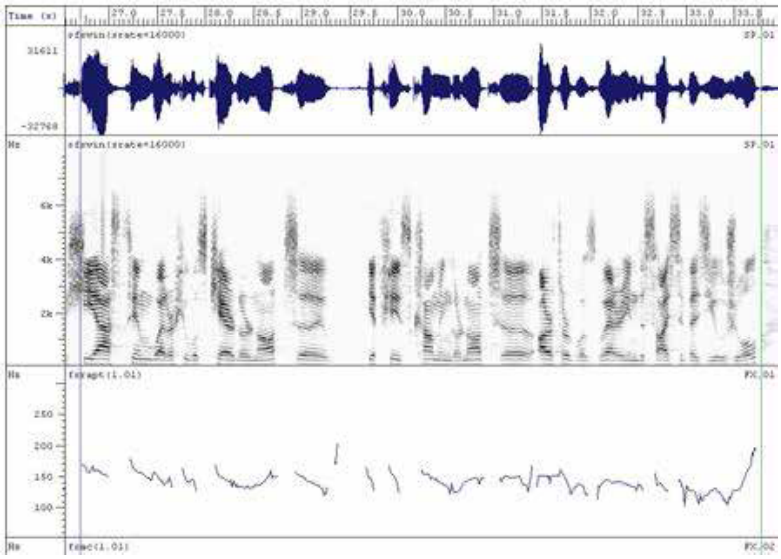

Figure 5. The beginning of the speaking task (story retelling) produced by S5 (female), illustrating higher but rather narrow pitch range used.

Compared to the reading task, the **pitch range** used by the participants in the speaking task was typically much narrower, albeit a bit higher on average. *Figure 5* above illustrates this by showing the level tones and a rather high but narrow pitch range used by participant S5 (female) in the speaking task.

3.3.2. Marking information structure

The prosodic cues of pitch height and pitch range are important because they mark the tonicity function of intonation by signalling information structure: new information is signalled by increased pitch height (Wennerstrom 1994), given information is indicated by suppressing the initial F0 peak (Nakajima and Allen 1993). The English focus is signalled by both pitch height and pitch movement, and by the expanded pitch range on the focused item (Johns-Lewis 1986, Xu and Xu 2005).

Our participants used relatively high F0/pitch for new information, especially on the syllable bearing the nuclear accent in the focussed part of the

utterance. However, in both the reading and speaking tasks, instead of high pitch peaks, speakers often used relatively high but level tones, even for narrow or contrastive focus. For instance, *Figure 6* shows the utterance *"... decided NOT to go"*, with the contrastive focus on *not*, pronounced by participant S4 (female) in the speaking task. Also, our participants never used a remarkably lowered pitch for the backgrounded part of a narrow-focus intonation unit, nor did they use 'a gradual rise preceding the fall on the focus'(Mennen 2007).

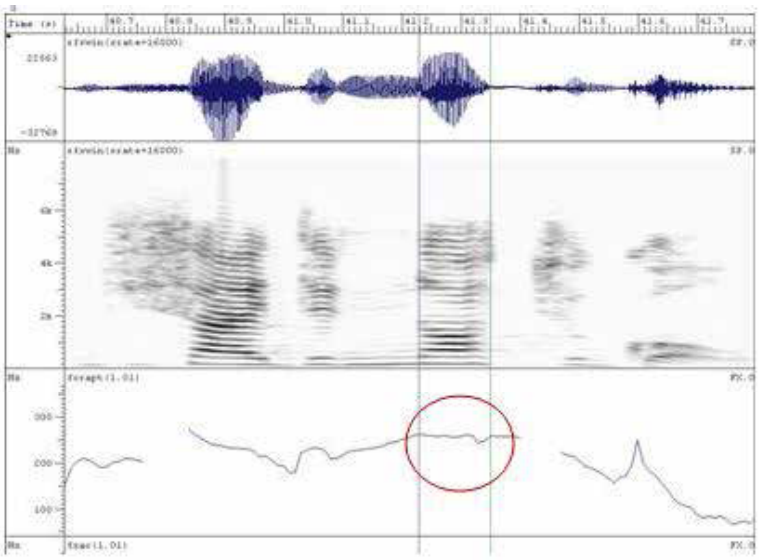

Figure 6. Contrastive focus on *"decided NOT to go"* signalled by high but level pitch by participant S4 in the speaking task.

In addition to the problem related to the use of pitch height (instead of pitch movement), our EFL students resorted to the use of medium pitch range which was not expanded to signal information structure (e.g. new information or focus).

Finally, the suppression of the F0 peak for given information (lowering the pitch) and for elaboration on the previous utterance (see, for example, Nakajima and Allen 1993) was very rare in our participants' reading and speaking tasks. The compression or lowering of the pitch range in the backgrounded or even parenthesised parts of the utterance was not attested in the data. *Figure 7* illustrates this by showing the sentence *"Well," said the old rat "do as you please"* produced by participant S5 (female) in the reading task. The part that should be parenthesised (*"said the old rat"*) was not marked by the suppressed initial pitch peak, nor was the pitch range either lowered or narrowed.

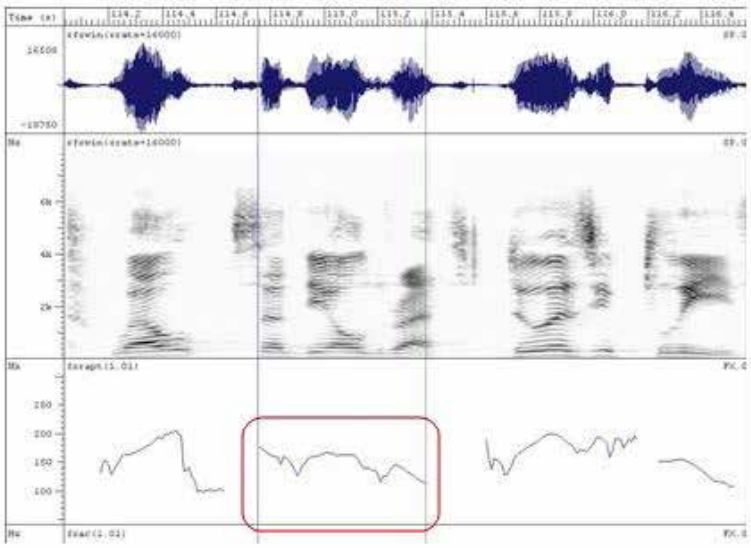

Figure 7. Sentence *"Well," said the old rat "do as you please"* produced by participant S5 (female) in the reading task which consists of three intonation units; the middle IU, which should be parenthesised, is not signalled by either lower or narrower pitch range.

3.3.3. Interactive and illocutionary functions

Empirically established prosodic cues for signalling the end of a speaking turn or conversational exchange include (in addition to the decrease of amplitude, Brown *et al* 1980, Johns-Lewis 1986) the lowering of pitch and compression of the pitch range. Initiating a new topic or floor-taking is signalled by high pitch peaks and a higher or wider pitch range (Brown *et al* 1980) or high 'key' (Brazil 1997). Regarding illocutionary or 'speech-act' functions, seeking confirmation is signalled in English by a high rise IU final tone (Du Bois *et al* 1993), except in question tags, which show a specific prosodic pattern. A rising final tone indicates seeking information or expressing doubt, while a final fall implies seeking confirmation; uncertainty is signalled by the fall-rise in question tags (Ramirez-Verdugo 2005, Ramírez-Verdugo and Trillo 2005).

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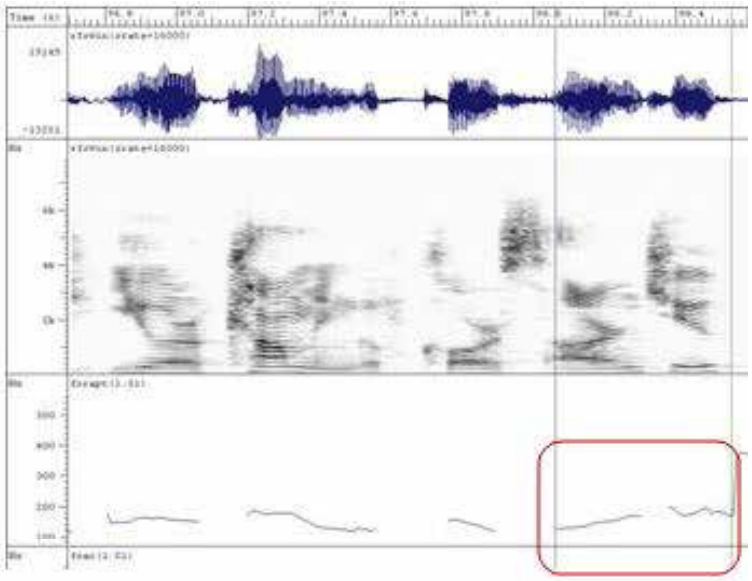

Figure 8. Sentence *"You are coming, of course, aren't you?"* produced by participant S5 (female) with a notable rise on the question tag (123Hz – 180Hz).

Contrary to the findings of Paunovic and Savic (2008), the participants in this study invariably used a rising tone in question tags, irrespective of the illocutionary context. In the reading task, for instance, all the participants used a rising tone in the question tag of the sentence *"You are coming, of course, aren't you?"*, even though the illocutionary force of this utterance should be seeking confirmation. *Figure 8* above shows how the utterance was read out by participant S5 (female), viz. with a remarkable rise on the question tag (ranging from 123Hz to 180Hz).

Similarly, none of our participants used the appropriate prosodic cues to signal uncertainty, reserve or non-assertiveness: a final rise, a non-low F0 or a fall-rise to express doubt (cf. Hirschberg 2002, Vaissière 2004). The participants invariably used falling F0 contours, thus failing to signal illocutionary functions, such as seeking information or appealing (e.g. the last utterance in the example *"But can't you see the barn is about to crash down? **Aren't you scared?**"*). *Figure 9* shows the falling intonation contour used by participant S1 (male) and *Figure 10* below shows the same contour produced by participant S4 (female). Both F0 contours are falling. In addition, participant S4 used contrastive focus on *"you"*, although there was no justification for such an interpretation in the context.

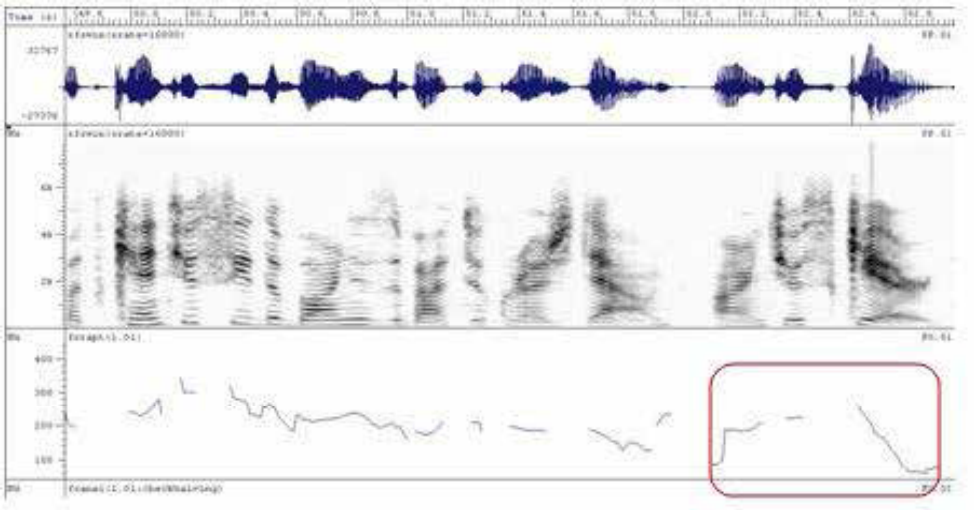

Figure 9. Dialogue chunk *"But can't you see the barn is about to crash down?* ***Aren't you scared?"*** – the falling F0 contour produced by participant S1 (male) instead of signalling appeal.

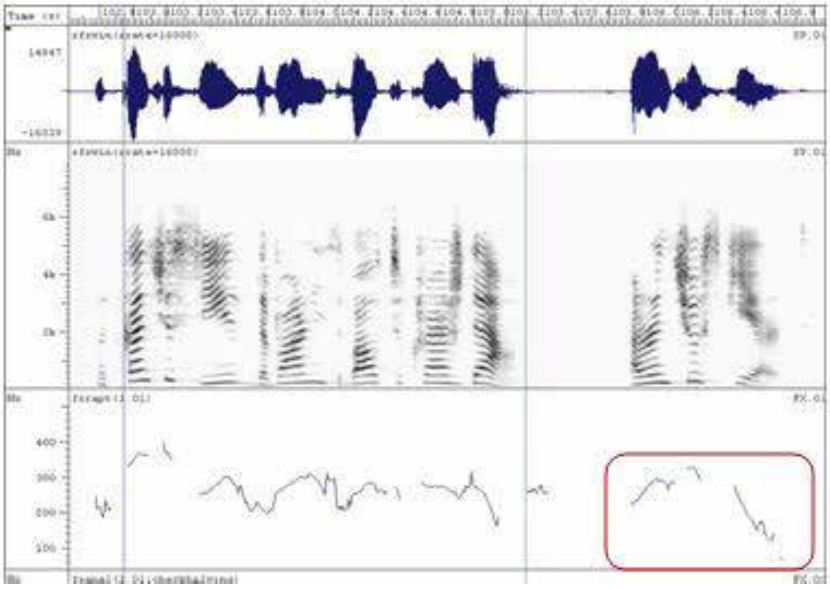

Figure 10. Dialogue chunk *"But can't you see the barn is about to crash down?* ***Aren't you scared?"*** – the falling F0 contour produced by participant S4 (female) instead of signalling appeal; contrastive focus placed on '*you*'.

4. DISCUSSION AND CONCLUSION

Summing up the problems related to the prosodic cues of F0 height and pitch range, comparing the performance of our participants in the reading and speaking tasks to the findings of similar previous studies, the use of a narrower pitch range seems to be the most commonly encountered problem

(cf. Busà and Urbani 2011, Komar 2005, Mennen 2007, Mennen *et al* 2008, Ramirez-Verdugo 2006). Our participants' pitch range was, on average, not wide enough in the reading task, particularly in the dialogue parts of the text. In the speaking task, it was both narrower and slightly higher than in the reading task, reflecting the commonly observed EFL speech trait (cf. Busà and Urbani 2011, Mennen *et al* 2012, for Italian EFL speakers).

Previous research also highlights EFL students' problems regarding the use of appropriate pitch contours, such as the use of rises instead of falls (and vice versa), wrong (too high) pitch level on unstressed syllables, wrong pitch movement over unaccented syllables preceding a fall (no gradual rise) and problems with the final pitch rise, either because it is too high (overshot) or because it is too low (Mennen 2007: 55). Other common errors include the use of inappropriate falling tones (instead of a fall-rise for the pragmatic and communicative functions of expressing uncertainty, continuation or reserve, Toivanen 2003) and inappropriate falling or mid-level tones (instead of a complex fall-rise tone in tag-questions which are supposed to express uncertainty, Ramirez-Verdugo 2005).

The findings of our study fall in line with these observations in almost every respect. Our participants had most obvious problems with the use of F0-related prosodic cues to signal illocutionary (speech act) and interactive functions, while phrasing and marking discourse boundaries were comparatively much more appropriate. Marking information structure, except for contrastive focus, was also problematic, since the participants used pitch height rather than pitch movement to signal focus. Most importantly, the pitch range was not manipulated to signal information structure: the narrow focus was marked by a higher but not by a wider pitch range, the pitch range was not lowered or compressed for given information and parenthesising, and the background syllables preceding the nuclear fall were never marked by a gradual rise (i.e. the appropriate pitch contours). Lastly, complex tones (fall-rise and rise-fall) were never used by our participants, although they would have been the most appropriate signals in several IUs in the reading text.

Our participants exhibited more problems in the reading task compared to the speaking task. In story retelling, the participants used narrative structures only and there were no dialogues. The range of functions that would require the use of specific phonetic cues was therefore reduced, which may account for the wider range of problems shown in reading. On the other hand, in the speaking task the participants used unexpected and inappropriate rising tones rather frequently, instead of unit- and sentence-final falling contours. Bearing in mind Hirschberg's (2002) observation that the pitch rising or falling is associated with the degree of confidence the speaker brings to the utterance (i.e. rising pitch is associated with uncertainty, falling with certainty and assertiveness), this may be interpreted as a signal of the participants' insecurity and lack of self-confidence in the less restricted context of speaking. However, since it could also be interpreted as a sociolingistic trait of the participants' speech, given the rapidly spreading 'uptalk' trend among young English speakers, this should indicate a major direction for further research.

Finally, the cue of loudness/intensity was not examined in this study. However, since the auditory inspection of the materials often showed that the participants used loudness in addition to, or even instead of, higher pitch to signal narrow focus, this could indicate another possible direction for further research of EFL students' use of prosodic cues for various intonation functions.

In addition to certain limitations common to this area of study (e.g. a small number of participants and the choice of tasks for elicitation), another important limitation of this study was that it was not contrastive; in other words, it did not involve a detailed comparison between the participants' L1 Serbian use of prosodic cues and the cues used in English to signal particular aspects of grammatical, discourse, pragmatic or sociolinguistic information. A careful analysis of the similarities and differences between Serbian and English would offer better grounds for understanding whether specific problems result from L1 transfer or not.

Still, notwithstanding its limitations, this study showed that EFL students had different problems in the reading and speaking tasks. Therefore, both these aspects of oral performance need to be addressed in teaching prosody, and both should be taken into account when assessing EFL students' oral competence in the domain of prosody and intonation. Last but not least, our findings suggest that the perception and interpretation of prosodic cues should receive special attention in the EFL classroom, and that the relatedness of production and perception problems associated with the use of prosodic cues calls for much further research.

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Tatjana V. Paunović

VISINA TONA I OPSEG VISINE TONA U ČITANJU I GOVORU KOD STUDENATA ENGLESKOG KAO STRANOG JEZIKA U SRPSKOJ GOVORNOJ SREDINI

Rezime

Sve više pažnje, kako u teorijskim pristupima tako i u empirijskim istraživanjima, poklanja se načinu na koji se prozodija koristi u usmenoj komunikaciji, posebno u kontekstu učenja stranih jezika. Naime, adekvatna upotreba prozodijskih sredstava smatra se veoma značajnim ciljem komunikativno orijentisane nastave. U učenju engleskog kao stranog jezika, posebno su značajna ona prozodijska svojstva koja se tiču fundamentalne frekvencije i opsega visine tona, a koja se koriste kao markeri različitih intonacijskih funkcija.

U ovom radu predstavljeno je istraživanje u kome su ispitanici bili učenici engleskog kao stranog jezika (studenti prve godine na studijskom programu osnovnih studija anglistike na Filozofskom fakuletu Univerziteta u Nišu). Istraživanje je imalo cilj da ispita upotrebu opsega visine tona (*pitch range*), visine tona (*pitch height*) i kretanja tona (*pitch movement*) u čitanju i u govoru, da bi se iskazala sledeća intonacijska značenja: delimitacija intonacijskih celina (prema gramatičkim, diskursnim i intonacijskim indikatorima), markiranje informacijske strukture iskaza (u smislu označavanja različitih vrsta fokusa) i interakcione i ilokucione funkcije iskaza (signaliziranje govornikove namere, ilokucionog sadržaja, organizacije dijaloga i sl.).

Rezultati našeg istraživanja su pokazali da su ispitanici adekvatno koristili ova prozodijska sredstva za označavanje granica među gramatičkim, intonacijskim, pa i diskursnim celinama (npr. tema diskursa, pasus, rečenica i (prozodijska) sintagma) i, delimično, za označavanje informacijske strukture iskaza. Osnovne poteškoće su se javljale u razumevanju prozodije kao indikatora pragmatičkog značenja i u tumačenju interakcione i ilokucione funkcije iskaza.

Opseg visine tona u dijaloškim delovima teksta bio je nešto višeg nivoa, ali ne i šireg opsega. Širi opseg visine tona nije adekvatno korišćen za označavanje fokusa ili parenteze (kompresijom opsega visine tona). Ispitanici su imali više teškoća u čitanju nego u govoru (prepričavanje priče). Sa druge strane, u govoru je korišćen relativno uzak opseg visine tona i uglavnom srednja visina tona; u govoru su ispitanici takođe koristili uzlazne umesto silaznih kontura tamo gde to nije bilo kontekstualno prikladno.

Rezultati našeg istraživanja ukazuju na značajne pravce daljeg istraživanja u kontekstu učenja engleskog kao stranog jezika u srpskoj govornoj sredini, kao i na značaj detaljnih kontrastivnih ispitivanja maternjeg i stranog jezika u domenu upotrebe prozodijskih sredstava za označavanje komunikativnih funkcija, strukture diskursa, strukture informacija i pragmatike.

Ključne reči: intonacija, prozodijska sredstva, F0, opseg visine tona, visina tona, kretanje tona, engleski jezik, srpska govorna sredina

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