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# ПРОЗОДИЯ НА РЕЧТА НА БЪЛГАРИ, ИЗУЧАВАЩИ АНГЛИЙСКИ ЕЗИК: СРАВНЕНИЕ И НЯКОИ ПРОГНОЗИ

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## PROSODY IN THE SPEECH OF BULGARIAN LEARNERS OF ENGLISH: A COMPARISON AND SOME PREDICTIONS

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**Abstract:** The paper compares the prosody of Mainstream American English and Contemporary Standard Bulgarian with the aim of predicting possible difficulties for Bulgarian learners of English with the acquisition of the tonal inventory and the hierarchy of prosodic units of the L2, their phonetic realisations, main functions and frequency of occurrence, as well as with the stress and rhythm of English connected speech.

**Key words:** prosody, intonation, stress, rhythm, English, Bulgarian

In his distinguished academic career, Prof. D. Popov has always dedicated a substantial amount of time and effort to researching and teaching speech prosody. Intonation, stress, rhythm, tempo, etc. constitute the focus of his scientific interest, starting with his PhD which he defended back in the early 1990's and extending to numerous papers as well as monographs like “Фоностилистика на дискурса“ (2004) and „Лингвистична персонология“ (2016).

This paper compares some prosodic characteristics of (Mainstream American) English (MAE) and Contemporary Standard Bulgarian (CSB) and attempts to predict possible difficulties which (advanced) Bulgarian learners may experience when they acquire English prosody. Such a comparison is possible because both accents have been systematically described within the same analytical framework – that of Autosegmental-Metrical (AM) phonology. The comparison is drawn following the methodology of Mennen's (2015) L2 Intonation Learning theory (LILt).

According to Mennen, languages can differ both in terms of the number of structural elements (pitch accents, phrasal accents, or boundary tones) in them or in terms of the phonetic implementation of those elements. Prosodic phonological differences between languages are categorical. Prosodic phonetic differences, on the other hand, are gradient. Prosodic

interference on the phonological level would involve transfer as a consequence of differing inventories of tunes in the L1 and the L2, differing forms of these tunes, or different meanings of the tunes, whereas interference on the phonetic level would involve transfer due to a different phonetic implementation of a tune in L1 and L2.

Modifying Ladd's (1996) parameters of cross-language variation, LILt recognizes four dimensions along which prosodic (dis)similarities can be described:

- (i) the systemic dimension, which involves the inventory of phonological categories and their distribution;
- (ii) the realisational dimension, which characterizes the phonetic implementation of the categorical phonological elements;
- (iii) the semantic dimension, which is concerned with the functional importance of the phonological categories;
- (iv) the frequency dimension, which considers the frequency of use of the categorical elements.

### 1. The systemic dimension

A comparison of the inventories of prosodic phonological elements of English and Bulgarian will include the pitch accents, phrase accents and boundary tones, as well as the units of the prosodic hierarchy.

(Mainstream American) English (Beckman et al 2005) and Contemporary Standard Bulgarian (Andreeva and Dimitrova 2022a, b) share virtually the same inventory of pitch accent types which can be found in both nuclear and pre-nuclear position (Table 1).

	Manistream American English	Contemporary Standard Bulgarian
pitch accents	L* H* (!H*) L+H* (L+!H*) L*+H (L*+!H) H+!H*	L* H* (!H*) L+H* L*+H H+!H* (H+L*)
phrase accents	L- H- (!H-)	L- H-
boundary tones	L% H% %H	L% H% %H

Table 1. MAE and CSB phonological tones (allophones are shown in brackets).

Our prediction is that Bulgarian learners of English are unlikely to face any major problems in the acquisition of the English pitch accents, phrase accents and boundary tones.

The comparison of the prosodic units in the two languages reflects the recent proposal in Andreeva and Dimitrova (2022a) that in Bulgarian, the prosodic word may be part of the prosodic hierarchy. Thus, the prosodic hierarchy for English will include the following constituents:

- $\sigma$  = syllable;
- W = (lexical) word;
- ip = intermediate phrase;
- IP = intonational phrase;

By comparison, the prosodic hierarchy for Bulgarian will include an additional level between that of the word and the intermediate phrase – the level of the prosodic word ( $\omega$  / PW) – a unit composed of a host and its clitic(s). The different hierarchies of prosodic units in the two languages are thus likely to cause problems for Bulgarian learners of English.

A comparison along the systemic dimension must also include the ways in which the structural elements combine with each other - the “tonal phonotactics”. Given the lack of comprehensive lists of the tonal combinations (tunes) allowed in the two languages, a systematic comparison is rather difficult to draw at the moment. However, some parallels can be made on the basis of existing analyses.

- (i) All four possible combinations of a phrase accent and a boundary tone are permissible in both languages:
  - L-L% - a low ending typically occurring at the end of declaratives;
  - L-H% - the typical "continuation rise";
  - H-H% - high-rising ending, as in yes-no questions; it can also signal non-finality;
  - H-L% - a mid plateau.
- (ii) Some combinations of nuclear pitch accents, phrase accents and boundary tones attested in both languages, along with their interpretation (the semantic dimension), include:
  - H\* L-L% - the neutral declarative pattern;
  - H\* H-H% - a tune used to signal non-finality, or for questioning;
  - L\* H-H% - the canonical yes-no question tune;
  - L\*+H L-H% - a combination used in both languages to convey uncertainty or incredulity.

These examples do not by any means exhaust the list of similarities between English and Bulgarian in terms of tonal phonotactics. The study of the permissible tunes in the two languages is a topic for further research, and can reveal important differences between them.

The comparison must also specify the principles of “tune-text association” (Ladd 1996) – how the tones are realized with respect to the segmental string of the utterance. Here, English and Bulgarian also share a number of similarities:

- In both languages, a starred tone is associated with a lexically stressed syllable, whereas the leading or the trailing tone of a bitonal pitch accent is associated with an unstressed syllable which precedes or follows it;
- L\*+H shows F0 minimum within the stressed syllable;
- L+H\* shows F0 minimum before the stressed syllable and F0 peak (maximum) within the stressed syllable;
- The starred tone of the H+!H\* pitch accent is realized as mid and is preceded by a high target;
- Syllables not associated with a tone (tonally underspecified syllables) receive their surface F0 by interpolation between the pitch accents which precede and follow them (however, F0 may sag between two consecutive H\* pitch accents);
- Phrase accents are realized over the syllable(s) immediately after the nuclear pitch-accented word up to the end of the phrase;
- A boundary tone is an obligatory property of the IP and is realized on its final syllable;
- The IP-initial boundary tone %H is optional in both languages;
- Upstep and downstep occur in both languages.

The above similarities suggest no major problems for Bulgarians regarding the systemic dimension.

## 2. The realisational dimension

The realisational, or phonetic, dimension of the LILt model makes it possible to reveal cross-language (dis)similarities in the way the elements of the prosodic system are phonetically implemented. Examples of phonetic implementation are the actual tonal alignment of the pitch accents - how they are lined up with the segmental string of an utterance; their scaling – their height relative to neighbouring pitch events in an utterance; their shape or slope – whether they rise or fall steeply or gradually.

An example of dissimilarity is the alignment of the H\* peak: in English, the high target of the H\* pitch accent is reported to occur towards the end of a syllable (Pierrehumbert 1980, Beckman and Pierrehumbert 1986). In Bulgarian, Andreeva and Dimitrova (2022a, b) report that when H\* is early in the phrase, the H target is usually reached close to the end of the accented syllable, but when it is late in the phrase, it is reached close to the beginning of the accented syllable. Another example is the alignment of the H trailing tone of the L\*+H pitch accent: in Bulgarian, it can be shifted one

or more syllables to the right. In general, Bulgarian pitch accents show more variable alignment of the tonal target with the tone-bearing unit. Due to transfer from L1, this is likely to cause deviations from the target in Bulgarian-accented English speech.

### 3. The semantic dimension

Before the advent of Autosegmental-Metrical (AM) phonology, researchers tended to describe intonation functions in terms of speaker attitudes and emotions (e.g., showing surprise or being polite), or in terms of speech acts (e.g., making a statement or asking a question). However, this approach does not provide a sound basis for unambiguously characterizing the semantics of tunes. For example, the “falling contour” H\* L-L% is used both in English and in Bulgarian as the default tune for declaratives as well as wh-questions.

Pierrehumber and Hirschberg’s (1990) AM approach to the description of pitch contours is different. They treat the meaning of the contour as compositional, resulting from the combined contribution of each of its parts – pitch accents, phrase accents and boundary tones. The choice of tune on the part of the speakers is determined by their desire to convey a particular relationship between an utterance, the current mutual beliefs of the participants in the discourse, and the anticipated contributions of subsequent utterances. A speaker accents an item in order to signal its salience in the ongoing discourse. The type of accent conveys information status – whether the accented item should be included amongst the participants’ mutual beliefs, or whether it should be excluded, or made inferable.

One problem with Pierrehumbert and Hirschberg’s approach is that it was never developed further after the publication of their programmatic paper in 1990. Another problem is posed by its relative complexity from the point of view of teaching intonational meanings to L2 learners. That is why a combination of older descriptions of English intonation functions is often to be found both in teaching materials and in research work on the topic. What is needed in order to make more informed predictions about the differences between English and Bulgarian along the semantic dimension of the LILt model is a body of research into the intonational functions in the two languages. Such research needs to have been conducted within the same analytic framework in order to enable systematic comparisons.

### 4. The frequency dimension

This dimension of the LILt is an addition to the dimensions initially proposed by Ladd (1996) and ensures that cross-language (dis)similarities in how often the elements of the prosodic system are used are also considered. It is well known that variability in the frequency of use exists even amongst

varieties of a given language which share the same tonal inventory. For example, Grabe and Post (2002) found that, in their data from the IViE corpus, speakers from Cambridge pronounced declaratives with a fall over 90% of the time, and with a fall-rise the rest of the time. In comparison, English speakers from Belfast produced declaratives with rise-plateaux nuclear accents in 80% of the cases, and with a fall – only 20% of the time.

In Bulgarian, the most frequently occurring pre-nuclear pitch accent is L\*+H, and the default nuclear one is H\*. The default nuclear pattern for declaratives is H\* / H+!H\* L-L%, and for yes-no questions it is L\*+H L-L% (Andreeva & Dimitrova 2022 a, b).

We can make some tentative predictions about possible deviations from the native English norms in the speech of Bulgarian learners: for example, due to L1 interference, they are likely to use L+H\* as pre-nuclear pitch accent and H+!H\* as nuclear pitch accent in declaratives more frequently than native English speakers. However, it should be borne in mind that available data for both languages are based on analyses of speech samples from a relatively limited number of speakers. Therefore, the validity of such predictions may be questionable. Until results based on larger, comparable as well as stylistically diverse datasets become available, it will be difficult to draw reliable comparisons of the frequency of use of prosodic constituents.

## 5. Stress

Although (lexical) stress is not part of Mennen's LILt model, it constitutes an integral part of the prosody of a language, and should therefore be included in any comparison of the prosody of English and Bulgarian.

The two languages have free lexical stress, and stress position has a distinctive function in both of them: e.g., the noun *'import* and the verb *im'port* in English, or the nouns *'napa* and *na'pa* in Bulgarian are distinguished from one another in speech by the position of stress.

English word stress is weight-sensitive, that is, it falls on heavy syllables with branching rhymes, while light syllables are always unstressed. Stress position in English is said to be predictable if information about syllable weight, word class and word morphology is taken into account. Apart from pitch change, the main acoustic correlates of stress in English are duration (perceived as length), intensity (perceived as loudness) and vowel quality (lexically stressed syllables have unreduced vowels). Of the latter three, duration and vowel quality have been claimed to play a major role.

Lexical stress in Bulgarian, on the other hand, is weight-insensitive: it is not dependent on syllable weight and can occur on both heavy and light syllables. Intensity has been claimed to be the main acoustic correlate of lexical stress in Bulgarian (Tilkov and Misheva 1978).

These differences in terms of lexical stress characteristics and position imply that Bulgarian learners are likely to have difficulties with the acquisition of English word stress. The weight-insensitive system of their mother tongue, along with the complex information needed for the identification of stress position in an unfamiliar word, make it difficult to teach any rules for stress placement in the English language classroom. The different cues to stress claimed to be important in the two languages are also a potential source of production and perception problems.

## 6. Rhythm

The rhythm of English speech has long served as the prototypical example of “stress-timing”. The view that the languages of the world can be classified as being either stress-timed or syllable-timed according to their rhythmic organization has been popular amongst researchers and foreign language educators since the middle of the twentieth century. In spite of the impressive body of experimental evidence which has demonstrated that neither interstress intervals in allegedly stress-timed languages, nor syllable durations in so-called syllable-timed languages are in fact isochronous, the theory of stress- / syllable-timing persists, not least because a “weak” version of it does receive some support from work on rhythm production and perception. In stress-timed languages like English, there is indeed a tendency for unstressed syllables to be shortened, for their vowels to be reduced and for their segmental composition to be simplified through elision and assimilation, as a result of which interstress intervals tend to be perceived as more equal than they actually are.

In order to reconcile this popular theory with the impossibility to ascribe a language unambiguously to one of the two rhythm types, the view of rhythm as a scalar rather than a dichotomous prosodic feature has become very popular. Dimitrova (1997) compared the rhythm of Bulgarian with that of English (claimed to be stress-timed) and French (a popular example of a syllable-timed language), using the characteristics of speech rhythm proposed by Dauer (1987) (Table 2).

Components of language rhythm	French	Bulgarian	English
Duration	N	0	+
Syllable structure	-	-	+
Intonation	-	+	+
Vowels	N	0	+



Consonants	-	-	+
Function of accent	-	+	+

Table 2. Bulgarian speech rhythm compared with that of English and French (adapted from Dimitrova 1997)

On a scale of rhythm, Bulgarian will thus occupy an intermediate position between French and English. English undoubtedly receives a higher rhythm "score" than Bulgarian: it has six "plus" marks, while Bulgarian has only two. Consequently, it is the "more stress-timed" of the two. The comparison of the prosodic features of English and Bulgarian predicts deviations from stress-timing in the L2 speech of Bulgarian learners of English due to L1 interference. However, the exact nature of the deviations and their classification in terms of the LILt dimensions remain a topic for further investigation.

In conclusion, many models of second language acquisition in the past tended to focus on the pronunciation of segmental sounds – the vowels and consonants of the target language. A quick survey of materials for teaching English prosody as part of foreign language instruction reveals that, if a broad definition of the term "prosody" is adopted, then some suprasegmental features do find their place in the curriculum. These usually include lexical stress and some basic intonation patterns, such as question intonation, the intonation of lists, etc. However, teaching materials based on in-depth comparisons between learners' L1 and L2 are sparse.

Even when adopting Mennen's LILt theory, a number of questions remain to be addressed, such as the extent to which L2 intonation learning depends on the acquisition of the segmental system and of other prosodic properties of the L2; the role of universal constraints on L2 intonation learning; similarities and differences between learners from different L1 backgrounds, etc. In addition, stress, rhythm and other temporal aspect of language prosody need to become a part of any model of prosodic learning. In spite of the many questions which still seek an answer, however, LILt remains the most thorough and well-developed theory of L2 prosody learning to date. It provides a sound starting point for prosody researchers and writers of materials for the L2 classroom but, as noted by Mennen (2015) herself, it should be treated as "an evolving or 'working' model, which is subject to change when more data are published".

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