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LINGUISTIC FEATURES RELATED TO STUTTERING EVENTS IN BULGARIAN CONVERSATIONAL SPEECH

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Резюме. Статията представлява изследване на лингвистичните фактори, свързани с проявите на заекване у възрастни лица с това плавностно нарушение. Категорични доказателства за подобна връзка в българската литература не съществуват. Такъв тип изследвания обикновено не са правени на базата на разговорна реч. Настоящото изследване е наблюдение на диалогична реч на петима възрастни заекващи от лингвистична гледна точка. То включва четири основни фактора – (I) словно ударение, (II) позиция на сричката, върху която е проявено заекването, в думата, (III) клас думи от гледна точка на синтактичната им функция и (IV) звуков тип. Резултатите показват, че случаите на заекване в речта на възрастни лица са свързани предимно с неударените срички, началната позиция в думата, пълнозначните думи и консонантите.

Keywords: linguistic features, stuttering events, adult stutterers

Introduction

An impetus for research into linguistic variables associated with speech disfluency was triggered by lots of foreign (e.g. Brown, 1945; Wells 1983; Melnick et al., 2000; Howell & Au-Yeung, 2002; Wingate, 1984, 2002; Dworzynski et al., 2003; Dworzynski et al., 2004; Natke et al., 2002, 2004; Wagovich et al., 2007) and a few Bulgarian studies (e. g. Georgieva, 1997, Georgieva et al., 1999; Simonska 2010; Padareva-Ilieva, 2011). The first impulse for this research path was given by Brown (1945). The so called Brown's factors (used as a baseline from almost all of the above mentioned authors for their studies) predict the loci of disfluency in English speaking adult stutterers. Concerning word class it was proved that content words are stuttered more than function words; words starting with consonants are stuttered more than words starting with vowels, etc. (Brown, 1945). Even that such an investigation of stuttering events in general was criticized afterwards for various reasons, many scientists continue searching the relation between stuttering and linguistic features. The

reason is to find out whether stuttering events occur on particular linguistic structures or stuttering is irrespective of grammar but connected with motor form complexity. Something more – levels of motor complexity on different linguistic units differ between languages (Dworzynski et al., 2003). Studying such a relation in as many languages as possible is useful for understanding the nature of stuttering in general (comparing the results of cross-linguistic studies) and the specific characteristics in every language which would cause difficulties for the stutterer. More research has to be done in that field especially in languages other than English and in Bulgaria there are great prospects particularly in adult stuttering investigation.

Dworzynski (2003) presents a research in language other than English exhamining Brown`s factors in native German-speaking children and adults who stutter. The phone words are starting with, sentence position, word class and word length were the examined factors. For adults it was found out that both word type (content/function) and word length increased stuttering rate significantly, whereas changes in stuttering rate for the other two factors were non-significant. It is interesting to mention here that for the adult group, it was predicted that words starting with consonants would not lead to as much of an increase in disfluencies compared with English samples, because of cross-linguistic differences in syllable onset properties. The paper also pointed out differences in stuttering rate concerning the four factors in the two age groups (Dworzynski et al., 2003).

The difference in the relationship of stuttering to some linguistic variables for adults and for children who stutter has been proved earlier especially concerning stuttered sounds. Consonants appear to be stuttered more often by adults and vowels – by children (Wells, 1983). Stuttered sounds and syllables often have been analyzed. The aim is to determine what aspects of them cause difficulty for the stutterer.

In 2002 Natke, Grosser, Sandrieser and Kalveram investigated whether there is a relationship between stuttering on stressed syllables and the duration of these syllables. Sixteen adults who stutter were involved in this study. It was confirmed that stuttering events occur more often on stressed than on unstressed syllables (Natke et. al., 2002). Two years later the so-called *stress-effect*, grammatical class and word position is investigated also by Natke and colleagues (2004). The purpose of their study was to find out whether the link that has been established between stuttering and linguistic stress in adolescents and adults can also be observed in childhood stuttering. The investigation shows that children stuttered more often on function than on content words and they showed a clear word-initial effect. Results revealed also that very few stuttering events occurred on other than the first syllables of words in preschool children (Natke et al., 2004).

The results of studies conducted on the relation between linguistic stress and stuttering in different age groups are very important. Using them we could answer the question whether the stress effect is a consequence of stuttering for several years (in some way due to coping or compensation), rather than being related to its origin (Natke et al., 2004). Also the relation *linguistic stress-grammatical class* must be taken into consideration. Concerning grammatical class it is proved for adults that there is an increase in contentword stuttering and a decrease in functionword stuttering (Au-Yeung, Howell, & Pilgrim, 1998; Dworzynski, Howell, & Natke, 2003).

In Bulgaria in 1997 Georgieva offers description of linguistic profile for stutterers. The aim is to provide for every stutterer an objective description of the main disfluency symptoms and also to refer them to particular phonological and syntactic features (Georgieva, 1997). Two years later an investigation was carried out with children in attempt to support the previous assumptions. The results of this research show that stuttering events occur usually on the beginning of the utterance. A relation was found out between particular disfluency type and certain phone groups (Georgieva, Alevizakis, 1999).

A linguistic analysis of speech of early stuttered and normal disfluent children carried out by Simonska revealed that symptoms occur on the beginning of the word, concerning word position; on nouns, verbs, prepositions and conjunctions, concerning word class and concerning syntaxes – on the beginning of the sentence (Simonska, 2010).

The results of such investigations are very important in attempt to find out the reason for stuttering speech behavior and its specific character.

Much more observations and research in detail are needed in Bulgaria especially in adults' stuttered speech. Something more, observing and discussing the results from linguistic point of view, concerning the specific characteristics of Bulgarian, is important (Padareva-Ilieva, 2011).

Aim of the study

There are no stronger evidences for the relationship between stuttering events and linguistic features in Bulgarian adults` speech. So the purpose of the present preliminary study is to provide a description of linguistic features related to stuttering events or influenced by dysfluency in Bulgarian.

The observed linguistic factors are: *1. Stress effect; 2. Word-initial effect; 3. Type of phoneme. 4. Word class.*

The authors formulate two concrete tasks of the study:

– to find out exactly which of these features are related the most to stuttering events;

– to find out whether the link that has been established between stuttering and linguistic stress, consonants and content words in adults speaking language other than Bulgarian, is appropriate for Bulgarian native speakers too.

Method

The present research study was developed in the frame of the Yaruss and Quesal (2006) ICF stuttering framework as a theoretical foundation for the current Evidence-Based Practice project (Georgieva, 2010). Their model was used to support the measurement of stuttering treatment outcomes (Yaruss, 2007).

Specific logopedics assessment procedures includes measurement of:

1. Changes in speech fluency before and after the intensive therapy (IT)

1.1. Duration of disfluencies in seconds (DDs) – the duration, in seconds, of the three longest stuttering events was measured

1.2. Index of disfluencies (ID) – the number of stuttering events by the number of syllables was divided. Each speaking sample contained at least between 300 - 400 syllables for more reliable results (Georgieva and Fibiger, 2010).

In the present study, we assessed treatment results using stuttering frequency and scores by application of the Stuttering Severity Instrument for Adults, Third Edition [SSI–3] (Riley, 1994).

The present study is an observation on dialogues of Bulgarian adult stutterers from linguistic point of view. To meet the purpose of the study, except speech recordings (during the therapy program), was developed an Analyzing Protocol (see Table 1). This Protocol was divided into two parts: phonetic (it concerns the association between appearance of stuttering events and a particular type of phoneme and linguistic stress) and morphological (linking stuttering events to lexical word class – function or content words).

Table 1.

ANALYZING PROTOCOL (LINGUISTIC FETURES RELATED TO STUTTERING EVENTS)				
NAME:				
Linguistic feature Disfluency type	Type of syllable (stressed/ unstressed)	Word position (word-initial position/ within-word position)	Content/ Function Words	Type of phoneme (consonant/ vowel)
Prolongation				
Repetition				
Sound repetition				
Syllable repetition				
One-syllable word repetition				
Block				

Stuttering events were identified by listening to the audio signal repeatedly using headphones.

For to accomplish the purposes of the study we have counted the stuttered units (stressed/unstressed syllable, word-initial/mid-word position, content/

function word, phone type (vowel/consonant) on which we have identified stuttering events.

We have also considered that one stuttered unit could bear either one or two, even three different disfluency types. If we count it as one stuttering event information could be lost (Natke et al., 2004). That is why we count every disfluency type as a separate stuttering event but in this study we do not define the linguistic unit as prolonged, repeated or blocked but just as a stuttered one. Of course linking a particular disfluency type with a particular linguistic feature is important but is not an aim of the present study.

Participants

Five adults (four men and one woman) average age 25 years participated in the investigation. Subjects were enrolled in a maintenance therapy program during which were recorded the sound files.

Therapy approach: late Van Riper's (1973) stuttering modification therapy approach, which constitutes a non-avoidance approach.

Results

The percentage ratio of the stuttered linguistic units is presented down here and also to be easier to bring into proper correlation diagrams are applied using absolute numbers.

1. Stress effect.

One of the purposes of the present study is to investigate whether the link that has been established between stuttering and word stress can also be observed in adults` stuttering in Bulgarian dialogue speech.

Counting stuttered stressed and unstressed syllables we found out surprisingly (having in mind the previous findings that adult stuttering is definitely related to stressed syllables) that unstressed (61.97%) syllables are more frequently stuttered than stressed syllables (38.03%) (Fig. 1).

2. Word-initial effect.

The investigation concerning stuttering events` occurrence and the correlation word-initial/mid-word position ascertained the preponderance of initial word stuttering (77.78%) /within-word position stuttering events - 22.22%/ (Fig. 2).

3. Type of phoneme.

Early findings in other languages report that consonants are stuttered more by adults (Brown 1945; Wells 1983). Our investigation found out almost the same correlation in Bulgarian adults who stutter more on consonants (84.07%) than on vowels (15.93%) (Fig. 3).

4. Content vs. Function words.

Do Bulgarian adult stutterers confirm the early reports for stuttering more on content words? Yes, they do. The results show that content words appear

to be more likely to be stuttered (70.87%) than function words (29.13%) (Fig. 4).

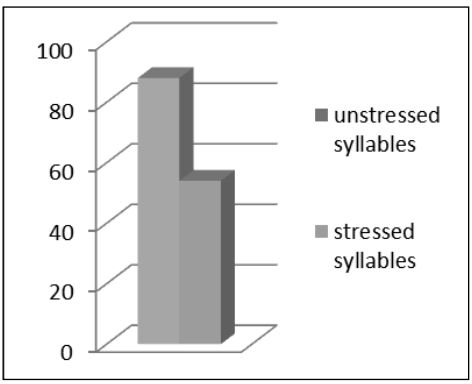
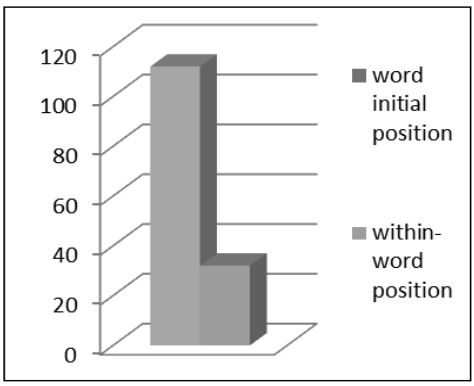


Fig. 1.



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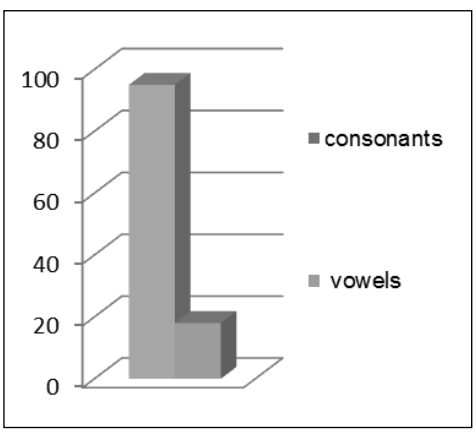

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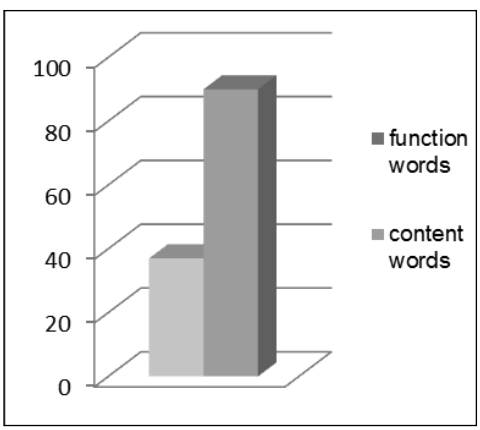

Fig. 4.

Discussion

The results of this preliminary study dispute previous findings about the relation *adult stuttering – linguistic stress*. But there is a good reason for that. This reason concerns the specific language characteristics of Bulgarian in comparison to English for example. In the investigations of the stress effect we have to pay attention to the fact how related in the particular language are linguistic stress and syllable word position. There are enough evidences for word-initial effect in stuttering. This paper confirms that too. But findings

concerning stress effect for stuttering and stress in English and German speaking adults claim that stuttering events occur both on word-initial position and on stressed syllables. We have to mention that in English as well as in German the majority of syllables containing stress is in the first position of words. This is one of the confounding variables Natke and colleagues emphasized to be controlled for when investigating stress effect (Natke et al., 2004). In Bulgarian the linguistic stress does not have a permanent word position. It could be either on word-initial or on within-word position. Even in two or more syllable words it would "prefer" within-word position. So in Bulgarian the relation *initial word position – stress* is not that strong.

More than that, the insignificance of *stress-effect* is probably natural and supports previous findings that adults increase stuttering on certain sounds (Van Riper, 1982) and such features may overlay the stress effect, for example (Natke et al,. 2002).

We have evidences in this investigation for a clear word-initial effect, but the observation of speech of one of the subjects reveals that stuttering events occur more often at within-word position. This usually is associated with appearance of consonant cluster at syllable onset in mid-word position. So general conclusion about linguistic features related to stuttering events can help speech therapists to arrange a therapy program (Simonska, 2010), but every subject has his individual features so an individual approach is more appropriate.

The results commented here show that stuttering occurs more often on consonants than on vowels. This confirms previous findings in other languages, as we have already mentioned above, but this conclusion is also logical because Bulgarian is a consonant language (the number of consonants is about 6.5 times larger than the number of vowels). Nevertheless vowels are very "active" in crating words and do not have distribution limitations. So obviously we need more evidences in Bulgarian stuttered speech for to conclude whether stuttering is related definitely to consonants or there is something more connected to the nature of stuttering itself and the phonatory functions of stutterers.

This research found out that content words are stuttered more than function words. Commenting on the results of investigations conducted on word class and stuttering Natke and colleagues (2004) pointed out that the difference in stuttering frequency for content and function words is also related to variations in stress patterns for these two grammatical classes. In English as well as in German function words are usually unstressed, whereas content words carry stress, which means that grammatical class and stress are confounded (Natke et al., 2004). Function words in Bulgarian are usually not stressed too but we cannot support the relation *word class – stress pattern – stuttering frequency* because we already gave evidences for the fact that stress is not the most important determinant.

We have to point out another fact here. Simonska (2012) states an assumption that stuttering events are changing their place of appearance from function to content words as stuttering becomes chronic (Simonska, 2012). Analyzing the stuttering frequency and the word class in two age groups native Bulgarian speakers Simonska confirms previous findings that the place of disfluencies could be a factor for transition to chronic stuttering (Simonska, 2012: 125).

Conclusions

This preliminary investigation has two main goals – 1. Which linguistic factors (stress, word position, word class, particular phone) are related the most to stuttering events in Bulgarian conversational speech; 2. Whether the link (*stuttering – particular linguistic features*) that has been established in adults speaking language other than Bulgarian, is appropriate for Bulgarian native speakers too.

This research linked stuttering events to the initial part of the words, content words and consonants, but puts the link *stuttering-linguistic stress* under dispute.

Lastly what can we conclude concerning the correlation between stuttering events and linguistic stress, word position, word class and type of phoneme after this research?

1. The stress effect is not that stronger and stress is not the most important determinant.

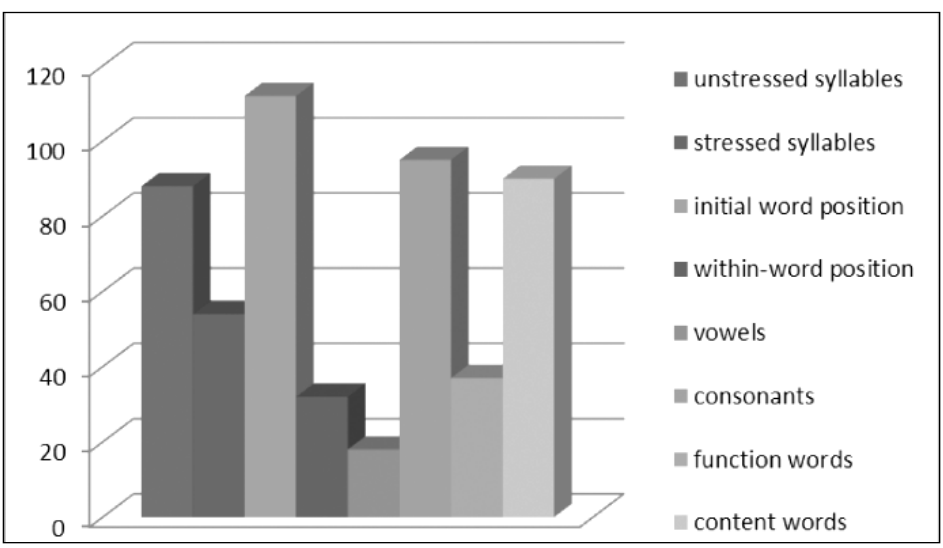

Fig. 5.

2. Stuttering events are more closely linked to the word-initial position than to the word stress.

3. The results support early findings that consonants appear to be stuttered more often by adults (Wells 1983)

4. The results confirm that there is an increase in content word stuttering in adults (Au-Yeung, Howell, & Pilgrim, 1998; Dworzynski, Howell, & Natke, 2003).

So generally the loci of stuttering are at word-initial position, at consonants, and lexically - at content words (Fig. 5).

Future work:

Further analyses in detail, concerning the correlation between linguistic features commented here and a particular disfluency type, syllable structure, phoneme distinctive features and prosody would enhance our understanding of this correlation and help speech therapists to improve therapy.

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LINGUISTIC FEATURES RELATED TO STUTTERING EVENTS IN BULGARIAN CONVERSATIONAL SPEECH

Abstract. The present preliminary study is a research on the linguistic features related to stuttering events in Bulgarian adults, as there are no strong evidences for this relation in Bulgarian literature. Recently studies of this kind have not been focused on conversational speech. The present study is an observation on

dialogues of five Bulgarian adult who stutter from linguistic point of view. This investigation concerns four linguistic factors – (I) word stress, (II) syllable word position, (III) word class, and (IV) phone type. The results show that stuttering events in Bulgarian adults` speech occur more often on unstressed than on stressed syllables, on word-initial position, on content words and on consonants.

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