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## DO THEY KNOW WHAT THEY ARE SAYING? SENTENCE STRESS AWARENESS OF PHONETICALLY-UNTRAINED SPEAKERS

Sentence stress is one of the most prominent elements of intonation. For the unmarked cases certain regularities can be observed as to its location, however, it has no single, established once-and-for-all site in an utterance, instead it is used to signify and signal additional information, such as thematic/rhematic structure, co-reference, contrast or emphasis. The fact is that within a linguistic unit containing more than one stressed syllable, these stresses will be perceived as being of different relative prominence. This difference is normally used to perform a number of varied linguistic function. Yet, it appears to be rarely consciously used. This feature of connected speech has been given relatively little attention, both within discussions of phonological systems of individual languages as well as in a contrastive or interactional perspective. The paper attempts to partially fill this gap by investigating the awareness of additional meanings carried by the marked/variable position of sentence stress. The investigations will focus on Polish speakers of English, as users of their native Polish language but also as competent users of English. The respondents are residents of Poland who have passed the extended level of the final secondary school leaving examination in English at the minimum level of 80%. The observation of this preliminary study seems to be that Polish speakers modify their sentence stress patterns proportionally to the growing proficiency and impact of other languages, with slightly different patterning than as predicted by, among others, the normative sources.

### 1. Introduction

Sentence stress is one of the most prominent elements of intonation and part of sentence discourse, typically not receiving separate attention, but rather observed and analyzed in connection with the meaning contributed by intonational features. For the unmarked cases certain regularities can be observed as to its location, however, it has no single, established once-and-for-all position in an

utterance, instead it is used to signify and signal additional information, such as thematic/rhematic structure, co-reference, contrast or emphasis. The fact is that within a linguistic unit containing more than one stressed syllable, these stresses will be perceived as being of different relative prominence. This difference is normally used to perform a number of varied though interrelated linguistic functions. Yet, this element of the melodic structure of sentences appears to be rarely consciously used. Additionally, it has been given relatively little attention, both within discussions of phonological systems of individual languages as well as in a contrastive or interactional perspective.

The paper attempts to investigate the awareness of additional meanings carried by the marked/variable position of sentence stress. The investigations will focus on Polish speakers of English, as users of their native Polish language but also as competent users of English. The respondents are residents of Poland, selected with the minimum level of 80% score on the extended level of the final secondary school leaving examination in English. The paper follows a modular rather than an integrative manner of investigation, hence only this particular element of the intonational structure is focused on. We are nonetheless conscious of the fact that the general intonational context may, and frequently does, provide the essential discourse contribution, not so much in the form but in the function. Additionally, no attempt is made to relate to the production side of the phenomena, only perception and comprehension are dealt with.

## 2. The concept and function of sentence stress

More and more recent research in phonology has focused on units larger than individual segments, extending over units which can encompass portions of speech substantially longer than single phonological segments. Prosodic phenomena are believed to be very important elements of a language phonological system. These are believed to comprise various prosodic phenomena serving as prominence marking (Keating 2003:119): phrasing (division into syllables, words and phrases), stress (referring to prominence of syllables at the level of a word), accent (prominence at phrase level accompanied by distribution of tones or pitch levels along these), lexical tones and intonational tones<sup>1</sup>. Among those the features of stress (intensity), tone (pitch) and duration (length), referred to as suprasegmentals of prominence, are present in every utterance speakers produce (Hyman 1975:203). Also, these aspects of the speech signal can be isolated and extracted as a pattern on an utterance – quite unlike segmental features. These suprasegmental properties can be organized into prosodic structure, which is the hierarchical compartmentalization of the segmental string into higher-order constituents, like syllables and intonational phrases, onto which a tonal structure,

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<sup>1</sup> Hyman (1975) notes that vowel harmony and nasalization are counted among suprasegmental features by some.

synchronized with the segmental and prosodic made-up, is overlaid (Gussenhoven 2001: 15294). As Gussenhoven (2001: 15297) explains, languages frequently exploit the peculiarities of their prosodic structure for the expression of focus and marking of information status in sentences. Such prosodic encoding of focus distribution may take several forms: phrasing, different types of intonational pitch accent for the focused element as opposed the non-focused part of the sentence or may de-accent non-focused parts, or – any combination of those. Out of the many among the prosodic features the one singled out here as relevant for the ensuing discussion is linguistic stress.

Word stress involves the prominence of a syllable within a word, but as words combine to form a larger unit – a phrase or a sentence – again one of them will receive greater prominence. This phrasal or sentence stress signifies the most prominent element in an utterance either in neutral discourse context or under conditions of particular speaker selection in specific situations (Archibald 1997: 264). Ladd (2008: 213) observes quite rightly that “it is now generally accepted that the pattern of sentence stress in an utterance reflects the utterance intended focus”, and yet there seems to be much less disagreement as to what focus actually involves. Szwedek (2010: 60) lists numerous examples which, to him, clearly demonstrate that sentence stress is important both as an independent phonological notion and as a linguistically meaningful contribution to utterance meaning through its distinction into its normal and contrastive function. As to its phonetic form or substance, it has been established that in many languages, like English and Polish for example, the ways in which stress is realized and perceived are changing pitch, duration and intensity (Lehiste 1970, as discussed in Szwedek 1985: 42). More so, word and phrasal stress implement the same phonetic correlates, through somewhat exaggerated realization of an idealized form of the word which receives emphasis, as a result the lexical item receives increased relative prominence (Szwedek 1985). Still, most researchers rarely analyze phrasal stress in terms of its phonetic correlates. Keating (2003), however, claims that accent influences even the segmental realizations, so that it is in fact phonetically encoded. Similarly, Sawicka (1988: 165-6) maintains that the three major factors such as fundamental values of  $F_0$  frequency as well as duration and intensity collaborate to constitute the melodic contours, of which phrasal stress is part. The actual acoustic make-up of the contours is straightforwardly correlated with the utterance and text meaning, thus far possibly performing a distinctive function. Text segmentation into phrases, through identification of pauses with identical or fairly similar  $F_0$  melodic line can thus be meaning relevant.

Archibald (1997: 264) observes that determining phrasal stress in a language is a more complex matter than determining word stress, since it involves two interfaces: (1) between syntax and phonology and (2) between pragmatics and phonology. There have been a number of attempts in a variety of methodological frameworks to explain the computation, and, what follows, the implementation of phrasal stress. The general agreement seems to be that sentence stress plays an important part in discourse as an element of sentence intonation. However, the

reason behind separating it for the present analysis is that the chief investigations will centre around the impact of its location in the marking of sentential focus. It is a fact that its position typically coincides with intonation centre (Marek 1987: 41), yet, this appears immaterial for the most of the cases to be investigated<sup>2</sup>.

Typically though, sentence stress is identified with intensity of producing (at least) one particular word in a sentence and notably its stressed syllable (Strutyński 1996: 65). Dukiewicz and Sawicka (1995: 182) underline that phrasal stress is of syntagmatic character, and the item carrying it receives some extra intensity. It is the cumulative exponent of several distinct mechanisms and it remains the characteristic of the phrase rather than of individual words. Its relative strength is an amalgam resulting from a cross-section of two separate accentual systems: the lexical and the phrasal. Unlike word stress, the prosodic characterization of a phrase, a unique and non-repetitive unit, is generative in character. It has been emphasized several times that many authors believe the location of phrasal stress to be dependent on the sentence semantics or, alternatively, to be the effect of interaction between syntactic surface structure and the grid made up of stressed syllables of a given phrase/clause/sentence. As Archibald (1997: 265) writes: "it has long been debated whether the prominence of a word in a phrase is determined by structural (or syntactic) factors or pragmatic (discourse) factors. Obviously discourse factors are involved".

For Szwedek (1985: 47) sentence stress is a text forming (cohesive) device, entering into syntagmatic relations with what builds the segmental structure, and interacting with other text forming elements, such as word order, definitization or ellipsis. That seems to be true also in the cross-linguistic perspective.

As to the functions of sentence stress, again several approaches can be noted. Most of the approaches uniformly mention the relevance of this prosodic feature for the informational (thematic/rhematic) structure of sentences, where in unmarked cases it singles out the "novum" and never the "datum" part (Szwedek 1989)<sup>3</sup>. Thus, it can safely be stated that at least one of the functions of phrasal stress is to manifest *focus*, a fundamentally pragmatic term that has to do with highlighting salient information in the discourse (Archibald 1997: 266). Mott (2005:195) explains the term *focus* as the concept that allows one to refer to parts of utterances that are highlighted because they express important information. Szwedek (1985: 43) straightforwardly states the relationship: the focus is the phrase containing the intonation centre, i.e. the main stress. Ideally, then, a direct relation between accent and focus can be observed: individual words are highlighted both phonetically and pragmatically (Ladd 2008: 214).

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<sup>2</sup> This approach follows directly from the one assumed by Szwedek (2010; 1991; 1989), who looked mostly at the relation between sentence accent and word order, definiteness, ellipsis, category membership, emphasis and marking of information structure of sentences.

<sup>3</sup> Szwedek (1989) specifies rather clearly and in detail how this novum/datum marking is realized in relation to the sentence nominal portion. The reader is referred to this paper as well as Szwedek (1991) for details.

A supplementary distinction into broad and narrow focus further clarifies the highlighting job of phrasal accent: broad focus sentences are those where all the information is new, like *Tom hates fish*, with *fish* receiving most prominence in the utterance; while shifting the sentence stress back onto either of the two words emphasizes one of them specifically and thus it produces a narrow focus sentence. It has been pointed out that broad focus sentences can potentially be read ambiguously: with the assumed broad or narrow focus, so that in the example above the meaning decoded could also be “fish but not meat or other food”. Ladd (2008: 215) describes the problem in the following fashion: “despite clear meaning differences, the sentence stress pattern that signals broad focus on a larger constituent [...] is similar or identical to the pattern that signals narrow focus on the single word [...]”. Additionally, it needs to be borne in mind that the *novelty* in a sentence may be of different types, to mention only referential, functional and grammatical novelty. Generally, the novelty recognition will be dependent on whether the entity referred to has or has not been recently introduced to the discourse. This is supposed to demonstrate the opposition with *contrastiveness* or *informativeness*, related to a statement of the proposition for one discourse rather than the other (Ladd 2008: 219).

Consequently, it is not always the *new* in the utterance that get highlighted through sentence stress, it has been argued that semantic weight more than, or in addition to, syntactic structure may determine whether a given element receives the extra prominence, especially so when the predictable elements, those construable from the context, appear to be de-accented. Szpyra-Kozłowska (2002: 47) observes that thanks to phrasal stress the actual segmentation of the utterance is made more clear, and the division into theme and rheme becomes more pronounced.

Apart from that, to signal additional emphasis, phrasal stress may appear in a position not typically reserved for it. This again relies on the relation between a principally semantic category of emphasis and a phonologically assigned and manifested feature (Marek 1975). The intended effect of applying the sentence stress in an unnatural location is to introduce contrast between what has been expected as opposed to what has actually been expressed. Szwedek (1985: 44) refers to such cases as instances of contrastive or emphatic novelty<sup>4</sup>.

Finally, phrasal accent performs a sort of corrective function, where the normal given/new information relations are suspended by emphatic stress until it is corrected or counter-ascertained.

To sum up a bit: Ladd (2008) evokes here two competing approaches to the function of sentence stress, namely the normal stress view and the highlighting view. The latter assumes that there is one pattern of prominence (*normal stress*) assigned by rule to every sentence. This normal stress confers a single most

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<sup>4</sup> It has to be added at this point, for clarification, that such categorization may stem from the preoccupation of Szwedek to advocate the information marking function of sentence stress as the only natural one.

prominent stress to one word in the sentence, it has no meaning or function, being merely the result of phonological rule operation on surface syntactic structures. Any deviation from normal stress would involve *contrastive stress*, which marks some sort of emphasis or contrast on the stressed word. Contrast or emphasis are largely unpredictable and thus remain beyond the scope of linguistic rules. The highlighting view argued that any word in a sentence may be ‘focused’ or ‘highlighted’ to signal newness, contrast or some other kind of special informativeness, through assigning pitch accents, of which none is primary. Therefore there is no sharp distinction between normal (default) or contrastive stress, the default will simply constitute one end of the continuum of informativeness. A compromise between those two approaches is represented by the *Focus-to-Accent* (FTA henceforth) approach. The basic tenet here is that the location of stress is always meaningful but also unpredictable, dependent chiefly on various kinds of contextual influences. It separates the semantic/pragmatic notion of focus from the phonetic/phonological concept of accent. But it also does away with the idea that the normal and the contrastive stresses are fundamentally different. It is, however, the highlighting view that has received more approval among various researchers when investigating English and Polish. Moreover, the claim about the non-universality of particular accentual patterns is beyond dispute.

### 3. Sentence stress in English and Polish: the facts

Szwedek (1985: 46) presents the summary of the situation as related to sentence stress in the two languages, considering it to be largely identical:

- (1) Sentence stress situation summary (Szwedek 1985: 46)
- a. The sentence stress signals that the element on which it falls contains new information,
  - b. being new, this piece of information is context independent,
  - c. the element under the sentence stress is the only marked unit in the sentence,
  - d. the interpretation of the rest of the sentence in terms of given/new information depends on the context (unmarked),
  - e. thus the thematic structure (distribution of given/new information) can be diagrammatically presented as follows (table 1):

Table 1. The summary

FORM	unmarked (context dependant)		marked by stress (context independent)
MEANING	given (recoverable)	new (nonrecoverable)	new

Treating this as a starting point for a less concise presentation, let us outline the facts and illustrate them with examples.

In English (and in connection with intonation), in the careful style of spoken prose, e.g. a speech read at a meeting or the news read on radio or television the word which carries the syntactic or sentence stress will usually be the last lexical word (noun, full verb, adjective or adverb) in a clause (Gramley and Pätzhold 2004: 86). Most frequently the rheme, or that part of the sentence which contains new information, carries the stress. Ladd (2008: 231) supports it further by stating that since the English sentence stress can be influenced by the relative informativeness of words in an utterance, it is well known that the main accent tends *not* to be placed on elements that are repeated or ‘given’ in the discourse or those that are vague or generic. If a different word, for example, a function word or a lexical word besides the final one is to be stressed, this will be a case of contrastive stress. This means that the item which carries the accent is consciously emphasized in opposition to what might otherwise be the case, e.g. *Tom doesn't like apples (even though Diane does)*. This further illustrates the fact that the relative stress of words in a sentence depends on their relative – and in spontaneous speech often subjective – importance (Mott 2005: 193). We would normally expect the saliency of some of the lexical words (nouns, verbs, adjectives or adverbs). Sometimes, however, the speaker's desire to emphasize a word for contrast will result in increased intensity of the selected item while the stress of surrounding words is diminished: *Put the food in your mouth, not round your mouth* (Mott 2005: 194). Similarly, when a sentence contains a word which has already been used in conversation, that word does not receive stress, even when it is a lexical category: *How many times did you have to repeat that? – Five times*. This “anaphora rule” prevents the stressing of the second token of “times” (Mott 2005: 194).

The terms used in connection with sentence stress in English, either with broad or narrow focus sentences is *nuclear stress*. A syllable carrying such nuclear stress is made more prominent than the other stressed syllables in the sentence, and this salience is achieved through a combination of extra heavy intensity, and an upward or downward movement of the voice pitch. The nucleus, then, signifies the maximum of prominence in the accentual domain of a whole utterance. This demonstrates plainly the link established between the stress system and intonation (Fox 2004: 133). Thus, within the tone-group the nucleus bears the main features of the intonation pattern at the same time coinciding with the primary stress of the utterance. This understanding of the interrelationship is based on treating the main accent of the phrase as the most significant intonational feature (Fox 2004: 294).

In the typical broad focus sentences in English the nuclear accent falls on the stressed syllable of the last important word in this utterance: *You'll never see her again*. Needless to say, there exist numerous exceptions to this regularity. To mention but a few: the first involves the fronting of phrasal stress in sentences containing intransitive verbs, where the predicates denote appearance or

disappearance, describing “coming on the scene” or “sudden happening”, known as *event* or *presentation sentences*: *There’s a spider in the bath* or *The kitchen’s on fire* (Mott 2005: 197). Another exception is when the structures containing nouns followed by common verbs are uttered: *Peter has a duty to perform*. Ladd (2008: 239) adds here sentences with final adverbs or prepositional phrases (*There’s a fly in my soup*). Likewise, utterances with what can be termed semantically empty content words, items which are seen as vague or very general, such as *person, man, stuff, thing* etc., have a non-final phrasal accent as these items most frequently remain unaccented, as they contribute little semantic weight or interest. A similar tendency towards non-accenting is observed with non-negative indefinite pronouns in English (Ladd 2008: 236).

The location of phrasal accent may also be associated with the grammatical status of particular utterances, for example English accents the verb in Yes-No questions only if there is no following lexical noun. In WH-questions the question words do not normally carry the most prominent accent, unless they appear as echo questions (e.g. *They went where?*) (Ladd 2008: 225-7).

English can thus be classified as a language with “plastic” prominence patterns, weakly resistant to moving the main accent out of phrase-final or sentence-final position, as seen, for instance, in contextual de-accenting.

In Polish the preferred and most frequent location for the sentence stress is the last word of the utterance, and specifically (Strutyński 1996: 65):

## (2) Stress in sentences in Polish

- the last syllable of an utterance terminating in an accented monosyllable: *To jest ładny dom.*
- the last-but-one syllable of an utterance terminating with a polysyllabic word: *Spotkałem go przedwczoraj.*
- the sentence-final accentual unit: *Jutro rano wyjeżdżamy na wieś.*

This position is described as the unmarked, neutral position for phrasal stress in Polish. Additionally, according to Jadacka (2000: 1614), the specificity of Polish is that perceptually the whole item carrying the accent is singled out. She therefore postulates applying such ordering of sentence textual structure that the most important item occurs in the final position. Consequently, one ought to avoid placing there words which are auxiliary, bound or of secondary importance.

Sentence stress may shift, however, when a different item in an utterance is considered more relevant and needs to be emphasized in relation to the utterance specific meaning. Such shift can only be justified when the content element cannot be highlighted in a different manner (Jadacka 2000: 1614). Sawicka (1988: 170), on the other hand, claims that the border between the rhematic and the emotive accent is not sufficiently clear. The most characteristic neutral type of phrasal stress is observed in declarative statements with no specific syntactic means to signal the rheme: *Piotr czyta* (= czytanie to to, co Piotr



robi). When this rhematic sentence accent is combined with intonational high tone, it may signal a question form, or this combination of prosodic features may evidence some emotional marking, for example surprise (*Piotr czyta?* = *czyżby Piotr czytał? czy to możliwe, że Piotr czyta?* „is it possible that Piotr is reading? Piotr would be reading”). Thanks to this rhematic function of phrasal stress definiteness can be marked in Polish, as in *Psy szczekają* “the dogs are barking”. Non-final phrasal stress is also observed in WH-questions (Archibald 1997: 269).

Generally, Polish is fully able to move the stress in the phrase to focus an element, so that not only the rightmost element is most prominent, additionally, it is possible to observe more than one peak of prominence in an utterance. There is no limitation as to which utterance part may be made distinctive, the intensity is supposed to reflect the speaker’s most emotionally marked, important message part. Phonetically, such accented syllable is typically lengthened and made more intense. This is particularly well demonstrated when the first syllable of (several words) may receive unnatural accent to make it more emphatic: *Pozdrawiam rodzinę, kolegów i przyjaciół* (Szypra-Kozłowska 2002: 47).

Szwedek (1989) convincingly argues that sentence stress shows paradigmatic oppositions in that its presence manifests a different meaning in different context, but that it also enters into non-linear syntagmatic relations with the utterance parts. His main claim is that if the range of phrasal stress, which he equates with identification of the novum in the sentence, is actually dependant on the context and not the accent itself, it is not directly associated with the datum/novum structure and as such cannot be applied for focus identification. This becomes particularly conspicuous in a language like Polish, with a relatively free word order: it is possible to say both *Książkę czytałem* and *Czytałem książkę*. If both elements are informationally equal (both are novum), then it should be immaterial which of them receives sentence stress as long as it falls at the right edge of the sentence. However, exchanges like: *Co robieś wczoraj? – Książkę czytałem* are judged as unacceptable. Therefore, rather than observing blindly the end weight principle, under neutral interpretation Polish speakers accent the nominal element which constitutes the new information. Thus, phrasal stress in Polish is particularly significant for the nominal part of sentences. Only when all nouns in an utterance belong to the ‘given’ information structure, can a different element carry sentence stress, this time the one standing closest to the right edge of the sentence.

As Archibald (1997:270) summarizes it, “Polish tends to have rightmost prominence (like English) but under certain conditions, the stress can shift to the left (like English)”.

It will be interesting to observe whether speakers consciously perceive those intricacies.

## 4. The survey

### 4.1. The rationale

The main inspiration for the present survey was a minor but visible tendency observed when conducting research on native and non-native prosody interaction. It has been noticed in observation and personal interviews with a number of Polish immigrants in North Wales that they easily and somewhat effortlessly acquire and assume the intonational patterns heard in their (Welsh) English and Welsh speaking environments. More so, they appeared to unconsciously transfer those pattern into personal communication in their native language. Naturally, the longer the period of residence in Wales, and, concomitantly, the better the command of English, the more of this prosodic transfer was observed in their Polish. The first striking observations revealed that they copied and later used the emotive and contrastive value that sentence stress frequently has in English. With the growing proficiency in English, their understanding and subsequent use of sentence stress for communicating relevant portions of information became more pronounced.

It seemed to be a potentially fruitful area of investigation to examine and determine the awareness of sentence stress force of informative power within a group of speakers who do not constitute part of an emigré community but who live in Poland, communicate in Polish on an everyday basis and yet study (and hopefully use) English extensively. As Ladd puts it, sentence stress (and many other related phenomena such as pronominalization) may actually depend on the speaker's assessment of what is likely to be in the hearer's consciousness or at the centre of hearer's attention (Ladd 2008: 239). Consequently, the investigations were heavily biased towards perception, in the hope that well-developed recognition awareness will translate into more conscious and more deliberate use of this particular suprasegmental feature.

The primary aims of this research survey were thus as follows:

- To determine whether speakers can auditorily discriminate between utterances with sentence prominence marked through sentence stress, both in English and in Polish
- To examine the speakers ability to interpret the meaning communicated through the different positions of the accent, both in English and in Polish
- To investigate the possibility of interactional relationship between the relevant abilities in the two languages: do better perception and meaning awareness created through sentence accent in one language contribute to increasing the interpretational skills in the other; if so – which is the more likely direction of the influence.

## 4.2. The procedure

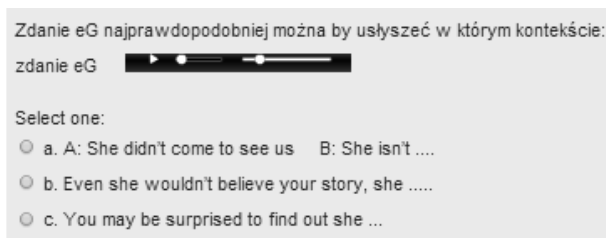
To work out the above-mentioned problem areas, a survey was prepared and conducted via electronic means of communication. The survey took place between the 23 March 2014 and 20 April 2014. It was conducted through the Moodle e-learning platform of the Pedagogical University of Cracow, where students have their regular Moodle accounts and other participants could enroll to take part in the survey. An overall number of 140 participants participated in the survey. Age-wise they range from the current year secondary school leavers, declaring to be taking the extended level exam in English up until a 23-year old graduate (an engineer) of Silesian University of Technology. Their estimated level of Proficiency in English is slightly above the FCE level<sup>5</sup>. All are untrained phonetically, both when it comes to English and to Polish.


The procedure was as follows: two sets of short sentences were recorded for the purposes of the survey; a male native speaker of Polish read the Polish examples, a female native speaker of English read the English ones. Some of the sentences were not marked for any unusual position of sentence stress, which therefore appeared in its default location. In others a particular word was singled out. An example is shown below<sup>6</sup>:

- (3) F To **nie** jest dobra poradnia.  
 G To **nie** jest dobra poradnia.  
 eA Is **this** what you're looking for?  
 eB Is **this** what you're looking for?

The sentences were then converted into MP3 files and hyperlinked to the relevant questions in the survey, which altogether consisted of 30 questions. The participants were to read the question, listen to the relevant audio file or files and provide an answer, choosing from the options listed. Only one question was of a true/false type. The sample format the respondents have seen is shown in (4):

### (4) Sample question format of the survey



Zdanie eG najprawdopodobniej można by usłyszeć w którym kontekście:  
 zdanie eG 

Select one:

a. A: She didn't come to see us    B: She isn't ....

b. Even she wouldn't believe your story, she .....

c. You may be surprised to find out she ...

<sup>5</sup> Save in one case, where the participant is known to have passed the CPE exam and with a very good grade – strangely enough, he did not score best on the survey.

<sup>6</sup> The letters refer to the designations the sentences had in the survey.

The questions called for recognition of a perceptual difference in the way two sentences were said, for providing an interpretation of an utterance meaning or selecting a context in which a given sentence was likely to be heard. Occasionally, reference was made to speakers communicating other related notions such as politeness or impatience. There was no limit set on the number of times the participants could play the recordings, at no time, however, had they any access to the written version of the utterances, so that in their judgment they had to rely solely on the auditory impressions. The full list of actual questions as well as the sentences serving as audio material are provided in the appendix. As an example, we show two instances in (5):

- (5) Zdanie H oznacza przede wszystkim, że mówiący
- jest zdumiony swoim odkryciem
  - próbuje przekonać innych, że ona nie jest taka głupia
  - ona jest zbyt sprytna żeby zrobić taką głupotę
- Zdanie H: Ona nie jest taka głupia

Zdanie I to polski ekwiwalent którego angielskiego zdania: : eF czy eG?

*Zdanie I: Ona wcale nie jest taka głupia*

*Zdanie eF: She isn't that stupid.*


*Zdanie eG: She isn't **that** stupid.*


### 4.3. The results

The formula defined by the Moodle platform was such that it informed the participants of the score they received in this quiz-format survey<sup>7</sup>, both as feedback to individual questions as well as the final score of correct/incorrect answers. Individual feedback is exemplified in (6)

#### (6) Sample question feedback

Czy wypowiedzi zawarte w plikach A i B brzmią tak samo czy jest między nimi różnica?

plik A 

plik B 

Select one:

a. tak samo ✓

b. jest różnica

The correct answer is:  
tak samo

<sup>7</sup> The most frequently communicated comment on their own performance was: „I didn't realize I was that deaf”.

The score overview is pictured in the graph below:

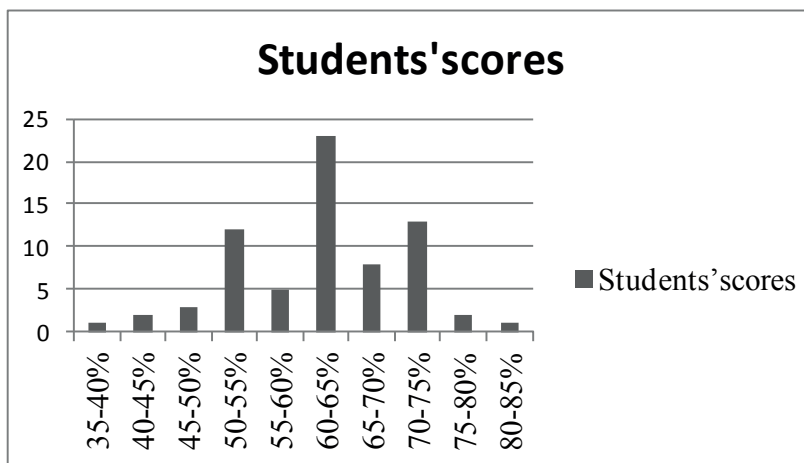


Figure 1. The overall score graph

It immediately demonstrates that the highest number of participants achieved the score between 60 and 65 per cent of correct responses, with very few of them demonstrating either poor or very good perception and understanding of sentence stress related meanings.

The general statistical information about the survey is summarized in the following table:

Table 2. Survey statistical information

<b>Quiz name</b>	Sentence stress survey_1
<b>Open the quiz</b>	Sunday, 23.03.2014, 08:45 pm
<b>Close the quiz</b>	Sunday, 20.04.2014, 11:30 pm
<b>Total number of complete graded attempts</b>	70
<b>Average grade of all attempts</b>	60.99%
<b>Median grade (for all attempts)</b>	63.33%
<b>Standard deviation (for all attempts)</b>	9.08%
<b>Score distribution skewness</b>	-0.3634
<b>Score distribution kurtosis</b>	0.1180
<b>Coefficient of internal consistency</b>	32.95%
<b>Error ratio (for all attempts)</b>	81.88%
<b>Standard error (for all attempts)</b>	7.44%

However, when we compare the percentage of correct responses, as calculated from the Moodle statistical facility index, given in relation to Polish utterances with those relating to English examples, the scores turn out to differ dramatically:

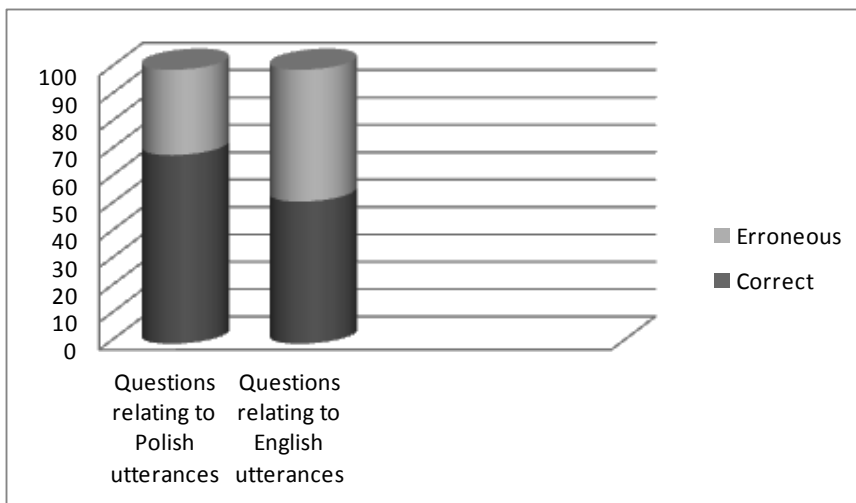


Figure 2. Scores of correct to incorrect answers for English and Polish

The results are respectively 68,85% and 51,88% for the percentage of correct interpretations of Polish or English utterances. Additionally, the average scores on an item show that students are more aware of what is being said to them in Polish than in English.

In order to see whether the results obtained in the survey can be generalized beyond the population tested, a non-parametric statistical tool, the chi-square test, was used to determine the statistical significance (or lack thereof) of the actual scores. For the purposes of calculation, an interactive online tool, allowing researchers to conduct chi-square tests for their own research was used (Preacher 2001). Since the basic comparison related to how well – or how badly – respondents performed on the questions pertaining to Polish as opposed to those pertaining to English, the observed percentages of correct and incorrect answers were entered into appropriate cells and then sums of elements within rows and within columns were computed. As a result, the following values were obtained:

Table 3. Chi-square basis

	Polish material	English material	Sum of elements
Correct answers	68.85	51.88	120.72
Incorrect answers	31.15	42.14	79.27
Total percentages	100	100	200

For the figures defined, the following chi-square values were obtained:

Table 4. Chi-square values

Chi-square	6.057
Degree of freedom	1
p-value	0.01385128

The calculated p-value of 0.01 certifies to the fact that the results obtained in the survey are statistically significant.

The variables defined by Moodle statistical tools as discrimination index and discrimination efficiency contributed to further fuller understanding of participants scores. Both are to do with the product moment correlation coefficient expressed on a percentage scale. The idea behind these variables is that for a question which fits in with other questions in a test, students who have scored highly on the other parts of the test should also score highly on this item, so that the score for the question and the score for the test as a whole should be well correlated. Discrimination efficiency allows to express this correlation as a percentage of the maximum value it could have taken given the scores the students got on a specific question or questions and the test as a whole. The specific survey structure analysis is depicted in table 5.

Table 5. Survey structure statistics &amp; analysis

Question	Attempts	Facility index	Standard deviation	Random guess score	Intended weight	Effective weight	Discrimination index	Discriminative efficiency
Q 1	70	98.57%	11.95%	50.00%	3.33%	1.67%	10.29%	31.51%
Q 2	70	100.0%	0.00%	33.33%	3.33%	0.00%		
Q 3	70	97.14%	16.78%	33.33%	3.33%	*	13.77%	32.08%
Q 4	70	100.0%	0.00%	50.00%	3.33%	0.00%		

Table 5

Question	Attempts	Facility index	Standard deviation	Random guess score	Intended weight	Effective weight	Discrimination index	Discriminative efficiency
Q 5	70	95.71%	20.40%	50.00%	3.33%	*	-18.09%	-36.95%
Q 6	70	78.57%	41.33%	50.00%	3.33%	4.73%	19.45%	25.66%
Q 7	70	30.00%	46.16%	20.00%	3.33%	4.23%	7.46%	10.45%
Q 8	70	70.00%	46.16%	20.00%	3.33%	3.06%	-4.29%	-5.42%
Q 9	70	75.71%	43.19%	33.33%	3.33%	6.04%	39.87%	51.71%
Q 10	70	67.14%	47.31%	33.33%	3.33%	5.35%	21.50%	27.01%
Q 11	70	72.86%	44.79%	50.00%	3.33%	2.34%	-8.80%	-10.97%
Q 12	70	50.00%	50.36%	50.00%	3.33%	4.61%	8.19%	10.34%
Q 13	70	70.00%	46.16%	33.33%	3.33%	3.20%	-3.14%	-3.84%
Q 14	70	18.57%	39.17%	50.00%	3.33%	2.12%	-7.20%	-11.86%
Q 15	70	60.00%	49.34%	33.33%	3.33%	5.46%	20.72%	25.93%
Q 16	70	68.57%	46.76%	33.33%	3.33%	6.00%	33.28%	41.72%
Q 17	70	38.57%	49.03%	33.33%	3.33%	4.55%	8.63%	11.37%
Q 18	70	72.86%	44.79%	33.33%	3.33%	4.65%	14.28%	18.51%
Q 19	70	85.71%	35.25%	25.00%	3.33%	*	-27.48%	-40.43%
Q 20	70	15.71%	36.66%	33.33%	3.33%	*	-23.29%	-39.47%
Q 21	70	48.57%	50.34%	33.33%	3.33%	4.91%	11.87%	15.04%
Q 22	70	27.14%	44.79%	33.33%	3.33%	2.70%	-6.28%	-8.83%
Q 23	70	17.14%	37.96%	33.33%	3.33%	2.18%	-6.13%	-9.80%
Q 24	70	61.43%	49.03%	25.00%	3.33%	4.95%	13.72%	17.29%
Q 25	70	54.29%	50.18%	25.00%	3.33%	4.04%	1.92%	2.47%
Q 26	70	91.43%	28.20%	25.00%	3.33%	3.99%	25.77%	43.76%
Q 27	70	31.43%	46.76%	50.00%	3.33%	4.20%	6.57%	9.44%
Q 28	70	18.57%	39.17%	20.00%	3.33%	3.72%	7.91%	12.47%
Q 29	70	72.86%	44.79%	20.00%	3.33%	6.49%	46.27%	59.72%
Q 30	70	40.00%	49.34%	50.00%	3.33%	1.67%	10.29%	31.51%

\* = Negative covariance of grade with total attempt grade



Without further going into details of the specific calculations, let us present certain dominant tendencies. The first observation to be made is that the average value score is attributable primarily to insufficient interpretation of the meanings related to English utterances. The erroneous judgments made by the informants may be stemming from their relative uncertainty in the command of English – they do not feel particularly competent in their responses, but may also be associated with other factors, such as (too) much weight attached to performing well in their native language rather than in the foreign (information acquired through personal interviews via online communicators). There have not been any substantial differences in the performance of secondary school leavers and regular students.

A closer inspection of the attempts with average scores (between 60 to 66.67%) reveals that in a vast majority of cases (79% of those attempts) the ratio of good to bad answers relating to English and Polish material was equal or nearly equal, between 27% to 33% of wrong answers for both languages. In nearly all attempts the sheer number of erroneous responses was greater for English than for Polish, best illustrated by the analysis of the best scores (83.33%), where 20% of wrong interpretations of the English material is juxtaposed with the 13% of misinterpreted Polish examples. Also, a clear correlation relationship could be observed in the attempts in the survey: the less mistakes in the questions basing on the English utterances, the less erroneous answers for the Polish-based material.

The last tendency was counter evidenced by one attempt, where the second best score was achieved with only one error in the questions relating to Polish sentences, but numerous (34%) wrongly interpreted English examples. In this particular instance it was revealed in a personal interview that the respondent has been involved in amateur acting events for many years and has received training in enunciation skills as well as artistic interpretation, which contributed to his very good performance.

## 5. Conclusion

The interpretation of the survey results proves difficult. First of all, the survey mostly involved recognition tasks rather than production. This necessarily eliminates certain broad or wide-ranging conclusions. In personal interviews, when giving justification for their willingness to participate in such survey format, the respondents claimed they wanted to know whether they can at least hear what is being said to them and interpret it correctly, that, in turn could constitute some initial training in actually using this element of sentence intonation more consciously. A good number of them actually proved very sensitive to this characteristic feature when asked about the context in which they would be likely to utter a particular sentence, for example as a warning, mild suggestion, to signal irritation etc.

As for discriminating between the sentences where the only difference was in the position of sentence stress: one in its default, sentence-rightmost position, in the other it was moved leftwards to signal narrow focus, the respondents proved very perceptive, the success ratio was around 97.6%. This implies that their perceptive and discriminating skills have been put to good use.

As to the speakers' ability to interpret the additional shades of meaning or focus communicated through the different positions of the accent, both in English and in Polish, they turn out to be generally better when it comes to Polish than to English. This is conceivably due to the fact that Polish is their primary means of (oral) communication, with English reduced to either class or not numerous social situations. The more extensive and frequent online communications in English are of no significance here, the oral element being utterly absent there. A closer analysis of the informants choices reveals their confusion with notions such as politeness, slight boredom, distinguishing between a simple statement of a fact and a suggestion as to the proposed course of action. It appears they have never been made aware that such details can be communicated via accent and/or intonation.

The most difficult to determine is the possibility of interactional relationship between the relevant abilities in the two languages: it cannot be unequivocally stated that better perception and meaning awareness created through sentence accent in one language contributes to increasing the interpretational skills in the other. As stated above, for the majority of attempts with scores between 60 and 66% of good answers the proportion of erroneous interpretations was nearly the same for English and for Polish, with only slight disadvantage in English. The ratio and the interaction may turn out to be different if a similar survey was conducted again, after some time, where the new awareness reportedly acquired through the present survey is strengthened through more practice in authentic socially and professionally communicative situations. Additionally, it needs to be remembered that the judgments only concerned individual sentences, taken out of longer stretches of discourse. This fact may have contributed to the confusion evident in some of the answers.

To conclude, the research implies that normally language users of a younger generation, that is those whose opportunities for actually using English and its command are on the whole much greater than those of their parents, do not realize that during speech they may be communicating shades of meaning not expressed through lexis or sentence structure. Therefore it may prove interesting to see if the awareness of the role and meaning of sentence stress, and of other suprasegmental features can be developed and transferred into actual communicative use.

## Appendix

The survey design<sup>8</sup>

1. Czy wypowiedzi zawarte w plikach A i B brzmią tak samo czy jest między nimi różnica?  
A & B Janek obronił Wiktora
2. Czy wypowiedzi zawarte w plikach A i C brzmią tak samo czy jest między nimi różnica?  
A Janek obronił Wiktora; C Janek **obronił** Wiktora
3. Czy wypowiedzi zawarte w plikach eA i eB brzmią tak samo czy jest między nimi różnica?  
eA Is this what you're looking for?; eB Is **this** what you're looking for?
4. W której z wypowiedzi eA i eB poszukiwanie tajemniczej rzeczy trwało dłużej?
5. Która z wypowiedzi eA czy eB jest grzeczniejsza, uprzejmiejsza?
6. Wskaż najsilniej wypowiedzany wyraz w wypowiedziach D oraz E.
 

Zdanie D	Zdanie E
a. zabił	a. zabił
b. tego	b. tego
c. psa	c. psa
D <b>Zabił</b> tego psa?	E Zabił tego <b>psa</b> ?
7. Która z podanych interpretacji znaczeniowych jest wg Pani/Pana najbliższa usłyszanej wypowiedzi D?
  - a. Zabił czy wywiózł?
  - b. Psa czy kota?
  - c. Którego psa zabił?
  - d. Zrobił to czy nie?
  - e. Zrobił coś złego temu zwierzęciu?
8. Która z podanych interpretacji znaczeniowych jest wg Pani/Pana najbliższa usłyszanej wypowiedzi E?
  - a. Zabił czy wywiózł?
  - b. Psa czy kota?
  - c. Którego psa zabił?
  - d. Zrobił to czy nie?
  - e. Zrobił coś złego temu zwierzęciu?
9. Które z podanych niżej znaczeń odpowiada temu, co mówi rozmówca w pliku F
  - a. Jako miejsca udzielania porad nie polecam, jako budynek – ładne
  - b. Jako miejsca udzielania porad nie polecam, jako miejsce spotkań owszem

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<sup>8</sup> This is the original format of the design. The moodle version required some rearrangements, so that finally it contained 30 questions

- c. Jako miejsca udzielania porad nie polecam, to jest ośrodek leczenia zamkniętego  
 F To nie jest dobra poradnia.
10. Wypowiedź G można by najpewniej odebrać jako  
 a. Informację, że kiedyś była, ale ten stan uległ zmianie  
 b. Ostrzeżenie: ja bym tam nie poszedł  
 c. Znużenie: przecież ci już o tym mówiłem  
 G To **nie** jest dobra poradnia.
11. Którą wersję: F czy G spodziewa się Pan/Pani częściej usłyszeć?
12. Którą wersję: F czy G spodziewa się Pan/Pani usłyszeć w reakcji na stwierdzenie „*Idę jutro do Compo-Medu*”?
13. Zdanie H oznacza przede wszystkim, że mówiący  
 a. jest zdumiony swoim odkryciem  
 b. próbuje przekonać innych, że ona nie jest taka głupia  
 c. ona jest zbyt sprytna żeby zrobić taką głupotę  
 H Ona nie jest taka głupia.
14. Zdanie I to polski ekwiwalent którego angielskiego zdania: eF czy eG?  
 I Ona **wcale** nie jest taka głupia  
 eF She isn't that stupid. eG She isn't **that** stupid.
15. Zdanie eG najprawdopodobniej można by usłyszeć w którym kontekście:  
 a. A: She didn't come to see us B: She isn't ....  
 b. Even she wouldn't believe your story, she .....
16. W zdaniu J mówiący:  
 a. Sugeruje, że rozmówca mógłby mieć problem z rozpoznaniem w tym czymś ciasteczek  
 b. Sugeruje, żeby nie zwracać uwagi na inne rodzaje poczęstunku  
 c. Sugeruje, że rozmówca nie widział wcześniej ciasteczek  
 J Polecam Panu te ciasteczka
17. Zdanie K to przede wszystkim:  
 a. Sugestia by nie zwracać uwagi na inne rodzaje poczęstunku  
 b. Sugestia by nie zwracać uwagi na inne rodzaje ciasteczek  
 c. Rekomendacja co zjeść  
 K Polecam Panu **te** ciasteczka
18. Zdanie L wyraża:  
 a. Zniecierpliwienie mówiącego całą sytuacją  
 b. Bezradność mówiącego wobec sytuacji  
 c. Chęć pokazania czy zademonstrowania a nie mówienia o sytuacji  
 L Zupełnie nie wiem co Pani powiedzieć
19. Zdanie M byłoby dobrym początkiem której wypowiedzi  
 a. ... żeby dała mi już Pani spokój  
 b. ... żeby nie zdradzić za dużo  
 c. ... żeby to miało sens  
 d. ... żebyś kobieto pojęła

- M    Zupełnie nie wiem **co** Pani powiedzieć
20. Zdanie eC można interpretować jako:
- Stwierdzenie niezaprzeczalnego faktu: ja nie jestem osobą decyzyjną
  - Zniecierpliwienie mówiącego (Dajże mi spokój)
  - Dobra rada – ja nie jestem osobą decyzyjną
- eC    Don't talk to me, Bob's the person you have convince.
21. Które ze zdań: eD, eE czy żadne jest spodziewaną odpowiedzią/reakcją w poniższych kontekstach:
- \_\_\_\_\_. You've given him a peach!
  - He can't break an apple into small parts, like into thirds or fourths
  - He's a weakling, he can't even break an apple into halves!
  - Are you sure he can do it with an apple?
- eD    He **can** break an apple into two.; eE    He can break an **apple** into two.
22. Proszę dopasować wypowiedzi eH, eI oraz eJ do najbardziej pasujących podanych niżej znaczeń czy interpretacji (jedna z opcji jest zupełnie nie na miejscu):
- If were you, I would do it (na Twoim miejscu bym to zrobił)
  - In the normal course of events this will be your duty (To twój obowiązek)
  - No, not him, it's your task (Ty masz to zrobić)
  - This is my opinion (tak ma być, tak mi się wydaje)
- eH    I think you should try it;    eI    I think **you** should try it;
- eJ    I think you **should** try it
23. W zdaniu eK wszystkie wyrazy są równorzędne, żaden nie jest szczególnie wyróżniony: TAK / NIE
- eK    My sister doesn't like apples.
24. Proszę wybrać zakończenie zdania eL spośród opcji podanych poniżej
- ..., your sister is a different matter
  - ..., my wife, my daughter – they are a different story
  - ..., she prefers pears
  - ..., she loves them dearly and eats tons!
  - ..., she simply hates them
- eL    My **sister** doesn't like apples.
25. Proszę wybrać zakończenie zdania eM spośród opcji podanych poniżej
- ..., your sister is a different matter
  - ..., my wife, my daughter – they are a different story
  - ..., she loves them dearly and eats tons!
  - ..., she prefers pears
  - ..., she simply hates them
- eM    My sister doesn't **like** apples.

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