

**Cross-linguistic phonological interaction:
Word-stress usage in the English
of Polish advanced EFL speakers**

ANITA BUCZEK-ZAWIŁA

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Abstract

The paper discusses the emergence of L1-induced word-stress patterns in the spoken production of Polish advanced speakers of English. In Polish, unlike in English, a great deal of word-stress predictability is attested, and the paper investigates whether this affects the actual production. The investigations are couched within the broad area of contact linguistics and are analysed in the usage-based cognitive phonological approach. A possible lack of exemplar connections to standard English forms is postulated here, so that EFL speakers develop patterns where the connections are being made to their native exemplars. The *Frequency in a Favourable Context* criterion is used here to estimate effects of use pattern that are distinct in the investigated languages. The data were obtained in a series of production tasks in a test-like format, by students in the English Department at PUK in Kraków. The results were analysed to the effect that they demonstrated a high level of L1 influence bordering possibly on innovation and propagation of new pattern of use, with cognate forms demonstrating the more rigid adherence to L1 stress locus.

Keywords

word-stress, cross-linguistic influence, usage-based approach, cognates

**Międzyjęzykowa interakcja fonologiczna:
Akcent wyrazowy w angielszczyźnie
polskich użytkowników**

Abstrakt

Artykuł omawia wzory akcentowania wyrazów w wypowiedziach polskich zaawansowanych użytkowników języka angielskiego, indukowane kontaktem fonologicznym. W języku polskim, w przeciwieństwie do języka angielskiego, akcent wyrazowy jest przewidywalny, co może mieć wpływ na akcentowanie w języku angielskim, z zasadniczo nieprzewidywalnym miejscem akcentu wyrazowego. Badania prowadzono w szerokim obszarze lingwistyki kontaktowej, jak i analizowano szczegółowo w kognitywnym podejściu fonologicznym opartym na użyciu. Celem było zbadanie możliwego braku przykładowych połączeń ze standardowymi formami języka angielskiego, a zamiast tego użytkownicy angielskiego jako języka obcego rozwijają własne wzorce, powiązane z ich wzorcem rodzimym. Specyficzną zmienną tu zastosowaną jest kryterium *Frequency in Favourable Context*. Dane pozyskano od studentów anglistyki w Uniwersytecie Pedagogicznym w Krakowie, poprzez serię zadań opartych na wymowie pojedynczych słów oraz zdań je zawierających. Wykonanie było oceniane niezależnie przez dwóch oceniających. Wyniki zostały porównane i przeanalizowane, pokazując wysoki poziom wpływu języka pierwszego, graniczący prawdopodobnie z innowacją i propagacją nowego wzorca stosowania, przy czym formy pokrewne (cognates) wykazują bardziej konsekwentne stosowanie wzorca akcentowego języka ojczystego respondentów.

Słowa kluczowe

akcent wyrazowy, interakcje międzyjęzykowe, podejście oparte na użyciu, wyrazy pokrewne (cognates)

1. Introduction

Usage-based framework to language and linguistic analysis considers cognitive processes as well as social interactions to be responsible for the structure and the emerging performance in language. Within naturally occurring speech in contact situations emerging usage patterns likewise produce novel forms, which are subsequently acquired, used and again modified. Foreign learners' renditions of L2 targets are at least in part governed by their native language sound patterns. Besides the segmental and sequential mismatches, there may be supra-segmental (prosodic) mismatches that underlie the (foreign-) accentedness evident in their production. Word stress deviations, for example, are naturally very frequent in learning English as a foreign language (EFL) because of the unpredictability of English metrical patterns, especially when English is learned by speakers of more predictable word accentuation (Porzuczek and Rojczyk 2017). English employs free-stress, which means that it can fall on various syllables, and that it also affects the way that vowels and consonants are pronounced, thus it influences the ways that listeners identify the words spoken. In that sense word-stress is essential to intelligibility and affects both native and non-native listeners severely (Lewis 2018).

For patterns to emerge and later to get entrenched in a given group of speakers, a combination of several factors is needed. The single most often evoked criterion is that of frequency, both of type and token. Thus, grammar is seen as an inventory of patterns deriving essentially from repeated use and differing in their complexity and the degree of conventionalization. Frequency is thus perceived as having a fundamental role as “both a result and a shaping force of the system” (Kemmer and Barlow 2000: x). Yet, on its own, the criterion of frequency appears insufficient to explain the phenomena of usage and pattern formation, so that other mechanisms need to be taken account of too. And that is despite observations

that stress placement error rate is inversely proportional to word frequency (Sobkowiak 1996).

The aim of this study is to examine the usage patterns of lexical level stress in English (L2) as used by advanced speakers of Polish. The specific issue this paper addresses is the potential emergence of L1-induced word stress patterns in the spoken production of Polish users of English. The subjects L1 as well as their L2 – English – belong to the accentual type, that is, they single out one syllable in an accentual unit, typically a word, as more prominent than those in the environment. Thus they can be described as systems that have stress (Archibald 1997: 167). For the purposes of this paper we take the following, generally accepted definition of word accent, based on the implied notion of prominence, without specifying what this notion entails: “Accent (stress) refers to the linguistic phenomenon in which a particular element of the chain of speech is singled out in relation to surrounding elements, irrespective of the means by which this is achieved” (Fox 2000: 115).

Languages on the whole differ with respect to the variability in the position of stress, yet Polish word-stress is to a great extent predictable. The aim therefore was to investigate whether this typological difference may possibly influence the acquisition and production of stress in a language like English, with little predictability in terms of stress placement. The analysis is couched not only within the broad area of contact linguistics but is specifically carried out in the usage-based cognitive phonological approach (Bybee 1999, 2001, Doherty and Foulkes 2014, Välimaa-Blum 2005). The idea behind this is that perhaps speakers of English as a foreign language initially at least lack exemplar connections to standard English forms and instead they develop patterns that testify to the connections being made to their native exemplar. The specific variable to be investigated is the *Frequency in a Favourable Context* criterion (Brown 2015). It estimates the effects of patterns of use that are distinct in the investigated pairs of languages, i.e. English

vs. Polish, yet in contexts that confusingly may resemble the native ones. The data were obtained in a series of production tasks in a test-like, non-experimental format, chiefly by students of pronunciation classes in the English Department at the Pedagogical University of Kraków. The subjects performance was evaluated independently by two scorers who focused on word-stress performance only, disregarding other, largely segmental, elements of pronunciation. The results were compared and analysed to the effect that they demonstrated a high level of L1 influence bordering possibly on innovation and propagation of new pattern of use in contact situations.

2. A taxonomy of stress systems of Polish and English – the consequences

Natural languages are characterised by a variety of types of stress systems. The taxonomy proposed by Archibald (1997: 168) is presented in Figure 1.

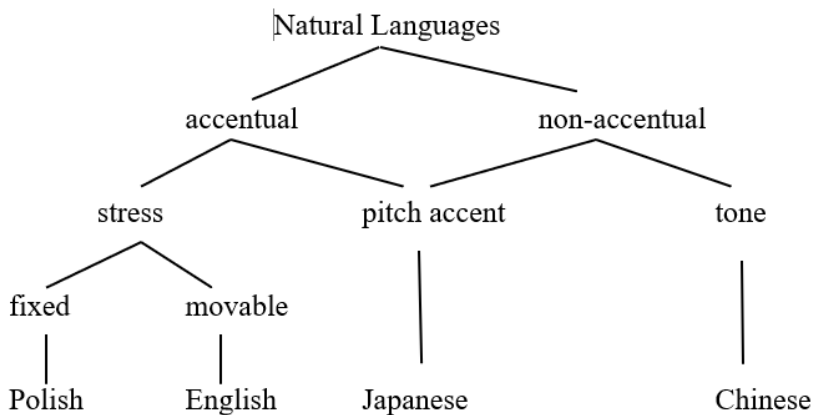


Figure 1

Since the subjects' native system belongs to the accentual type, the study ignores non-accentual languages completely. Typologically Polish and English are different in terms of the domain of stress assignment. Harry van der Hulst (2010) observes that the diversity in accentual patterns is substantial and he identified as many as 132 different manners in which languages can encode the location of primary accents. In an attempt to present some major trends in a typology of basic parameters underlying surface accentuation, van der Hulst (2010: 33) divides the languages into two major groups:¹

- a. Group 1: *fixed accent languages*: these languages always have primary accent on a particular syllable in the word (e.g. Czech, Finnish, Turkish, Macedonian, Polish);
- b. Group 2: *variable stress languages*: here the location of stress is not the same for every word but depends on one or more word-internal factors. This location is fully determined for every word, but across the lexicon different locations are observed (Epena Pe-dee, Malayalam, Ossetic, English (?), Spanish (?)).

Following the typology outlined above, we can determine that Polish typologically belongs to group 1: fixed accent languages, with the penultimate syllable as the locus of primary stress, while English is a group 2 system: variable stress languages. Taking into account the specific realizations of word-level prominence in the two systems, a number of metrical parameters can be delineated (Archibald 1992, 1993, 1997, Domahs et al. 2012, Domahs et al. 2014b, Kang 2011, Karpowicz 2008 – see Table 1).

¹ Van der Hulst (2014: 12) introduces a slightly modified terminology, remarking that word stress patterns are broadly categorized according the two criteria: boundedness and weight-sensitivity. Essentially his understanding is nonetheless along the lines of his earlier observations.

Table 1
The metrical parameter setting of Polish and English

The parameter	Polish	English
The word-tree is strong on the [left / right]	right	right
Feet are [binary / unbounded]	binary	binary
Feet are built from [left / right]	left	left
Feet are strong on the [left / right]	right	right
Feet are quantity-sensitive ² (QS) [no/yes]	QI	QS
Feet are QS to the [rhyme / nucleus]	NA	rhyme
There is an extrametrical syllable [no / yes]	no	yes
It is extrametrical on the [left / right]	NA	right

Polish and English systems are then straightforwardly dissimilar, English employing a quantity sensitive system, which is characterized, in absolute terms, by unpredictable word stress, while Polish has a fairly regular word-stress distribution. The tentative assumption to investigate, then, could be that speakers of Polish should in principle experience some major difficulties in the perception and production of the variable stress of English.

What is clearly absent in the system of Polish word stress is the kind of vowel reduction found in unaccented syllables so common for English (Śpiewak and Gołbiowska 2001). This reduction typically consists in changing the melody of the vowel portion of the syllable approximating the quality of the neutral vowel [ə]. Coming from a syllable-timed language, Polish speakers are expected to have difficulties with English vowel reductions and with rhythm, in addition to the significant dif-

² A language is quantity-sensitive (henceforth QS) if it makes a distinction between Heavy (H) and Light (L) syllables, avoiding unstressed Hs. A heavy syllable will typically contain a long vowel (monophthong or diphthong) or a combination of a short vowel and a single consonant. A Light syllable has a short simple vowel as its nucleus (Zec 2011).

ferences in the stress patterns of the two languages which prove to be sources of difficulty (Yavaş 2011).

Even though the domain of stress assignment is primarily the word in both systems, the actual locus of main stress is fixed: in Polish it is the last but one syllable in the default cases. There are a number of both lexical and morphological exceptions to the penultimate stress site, therefore, we can speak of a certain degree of variability in the stress position, which can be described as moderate (Peperkamp et al. 2010). It has been noted, however, that a powerful trend towards regularizing stress position to the default site is becoming more prominent. The examples cited involve the slow abandonment of antepenultimate stress in Polish words of foreign provenance or in preterite and conditional verb forms (Bereda 1993, Karpowicz 2008), with the resulting regularization. Accounts of the (apparent) exceptions are now available (cf. Peperkamp 2004) which try to minimize the amount and the contribution of non-default accentuation to the overall system.

Following the ideas of Peperkamp and Dupoux (2002) and Peperkamp et al. (2010), related to the abilities of perceiving word stress, it has been postulated that a notion of 'stress deafness', in its different degrees, can be used to relate to the perceptive sensitivity in the domain lexical stress. For example, speakers of Spanish, with the native system of variable stress and numerous exceptions are believed to show no significant stress deafness (Peperkamp et al. 2010). Speakers of Polish, on the other hand, despite the fact that they are accustomed to the fixed locus of stress, yet with 0.1 % of exceptions, are characterized as demonstrating weak stress deafness (*ibidem*), thus showing a certain degree of sensitivity to instances of misstressing deviating from the regular native pattern. Exceptional stress patterns are detected easily when applied incorrectly to words that normally receive pre-final stress. Still, stress-deafness does not automatically preclude the pronunciation of English words with correct prominence structure, which suggests a certain degree of independence

between perception and production in this respect (Porzuczek and Rojczyk 2017). Furthermore, the variability of stress patterns does not affect prosodic processing in general but instead leads to differential effects in stress perception. The conclusion is that stress predictability does not homogeneously result in the so-called “stress deafness” effects in stress processing, but that it rather emerges only for the default stress pattern (Domahs et al. 2013; Domahs et al. 2014a, 2014b). For Polish speakers, asymmetrical results obtained in the study of Domahs et al. (2012) can be interpreted to reflect that Polish native speakers are less sensitive to the default pattern than to the exceptional or post-lexical patterns.

When speakers of a language like Polish learn and use English as L2, they have to switch to using a lexical stress system that is markedly different from their own. The stress pattern found in English can be compactly defined as below (van der Hulst 2010: 445, van der Hulst 2014):

- a. Primary stress falls on the final syllable in nouns if the vowel is long, in verbs if the vowel is long or there are two closing consonants.
- b. In other cases, stress falls on the penult if it contains a long vowel or coda.
- c. Else stress is antepenultimate.
- d. Secondary stress falls on alternate syllables to the left (many exceptions).

Trommelen and Zonneveld (1999: 479) clarify in the following way: “main word stress in English is assigned leftward from the righthand edge of the word, in a quantity-sensitive fashion”, and thus it falls on “the rightmost available vowel”, given that “(i) any final rhyme is skipped, and (ii) a prefinal rhyme with a short vowel in an open syllable is disregarded” Thus, it appears that English has a quantity-sensitive right

edge system.³ Moreover, heavy syllables assume all the shapes listed above: a long vowel (or diphthong) in an open syllable, a short vowel in a closed syllable as well as the so-called “super-heavy rhymes” – long vocalic segment followed by a coda consonant. The final consonant in a word domain is typically extrametrical – it does not count for the purposes of stress placement. In derived words, English observes a distinction between stress-determining and stress-neutral affixes.

All this has certain consequences for the Polish speakers of English. Śpiewak and Gołębiowska (2001: 163) mention the difficulties with mastering the stress-timed rhythm of English, attempting to assign equal prominence to all words in an utterance, pronouncing full vowels in unstressed syllables and commonly mis-stressing a good deal of words following the native penultimate stress assignment pattern. On the other hand, Waniek-Klimczak (2002), in her study of highly metaphonologically aware students of English, observed a reverse tendency, namely to avoid L1 transfer in word-level stress, even if the strategy also resulted in stress errors. Similar instances were also reported on in Buczek-Zawiła (2012).

It can, therefore, be an interesting area of investigation to see how those speakers actually perform when it comes to producing word stress on individual items and when the items are embedded in a sentence, following the patterns employed in Archibald’s (1992, 1993) studies.

3. Research design and methodology

3.1. The aim

This paper describes an empirical investigation into the L2 usage patterns in a group of advanced speakers of English as

³ Compare, however, the findings and suggestions in Domahs et al. (2014b), where four options are offered and the specific role of extrametricality is discussed, particularly in relation to quantity-sensitivity reliance in stress assignment.

a second language, with some degree of L1 influence presence, pertaining to native lexical stress regularities. In doing so we try to account for second language learner competence and behaviour. The non-canonical renderings detected are in principle not treated as errors per se. Rather, we believe that they reflect the actual L2 phonologies that the participants developed from the usage patterns of the L2 English as they perceive it and L1 regularities, interacting in actual use. The first language influence is traced not only to simple pattern transfer but also to the cognate vs. non-cognate status of the target items. In essence, we investigate the acquisition of English stress patterns by adult, non-native Polish speakers of English.⁴

The specific problems addressed in this study are thus as follows:

- RQ1: Given the typologically different stress-assignment principles of the subjects' L1 in relation to English, is the L1 pattern transfer evident in the data?
- RQ2: Is the transfer extent significant?
- RQ3: Is the cognate/non-cognate status of individual items a factor in the influence detected?
- RQ4: What other factors contribute to the misstressing items?

From these, the following working hypotheses have been formulated:

- RH1: There is a substantial degree of L1 stress-assignment pattern transfer in the English as used by the participants.

⁴ We follow here on the ideas and design of a similar study in a different framework by Archibald (1992, 1993). Here, however, we do not assign any perception tasks to the participants, we concentrate solely on the production part. Similar design was applied when investigating the L2 phonology of Turkish and Spanish speakers of English in similar production tasks (Buczek-Zawiła 2018).

- RH2: Cognate items stress pattern is copied more faithfully than the non-cognate one, resulting in L1 influence of the default locus (*Frequency in Favourable Context Criterion*).
- RH3: Over-generalizing, analogy, and conscious effort to sound foreign, can partially explain the deviant forms.

3.2. The subjects

The participants group consisted of 32 randomly selected 1st year Polish students of English Studies Department at the Pedagogical University of Krakow, both regular day students (16) and extramural ones (16), who were approached early in the academic year of 2019/20 (October and November). All of them were freshmen students and therefore largely phonetically-naive. The general language proficiency of the subjects was, to the extent it was possible to be judged, approximately similar. It needs to be added that in the curriculum for year 1 students of the English Department there is a Practical Phonetics course, comprising, correspondingly, 90/54 hours of instruction for the day and the weekend students, yet the subjects participated in the experiment at the beginning of their training, so that it can be assumed that their expertise and performance equal that of students in other departments.

The reasons behind choosing these participants are connected with aspects such as their age (19-20 – save a few cases among the extramurals), command of English (at and above the FCE level) as well as relative conscious unfamiliarity with English phonetic/phonological system. In that sense they formed a reasonably uniform test group.

3.3. The methodology

In order to address the issues outlined above an experiment was designed with the aim of revealing the dominant tendencies. The participants were assigned two identical production tasks, as part of their instructional paradigm. In the first part,

they were asked to read out loud and record into a computer/mobile phone voice recording applications a list of **32** English polysyllabic words arranged in random order. The voice files were saved and sent to the author via e-mail. The second part followed after a minimum interval of a week. This time the students were asked to read out loud and record into a computer/mobile phone voice recording applications a list of **32** short sentences containing each of the targeted words recorded previously. To give but one example of the cognate and non-cognate items: the item *chocolate* was incorporated into the utterance *I like milk chocolate with nuts*; while the non-cognate *understand* appeared in *I don't understand this*. The order of sentences did not match the order on the word list. Tasks one and two both involved a production of **2048** tokens of 32 word types and 32 sentence types by all **32** participants.

The main study is limited to words with (primarily) single stress, consisting of at least two to at most four syllables. Some of the items, both cognates and non-cognates, actually had the same stress locus as in the participants' L1 typical pattern, namely the penultimate syllable. Table 2 below shows the items grouped according to lexical stress position and their cognate/non-cognate status. The standard stress locus is marked in bold.

The subjects' performance was evaluated independently by two scorers who focused on word-stress performance. One of them was a native speaker and the other an experienced pronunciation teacher. Thus, inter-rater reliability was ensured and the scoring procedure was validated. For each correct stress placement, the participants received a score of 1 and for misplaced prominence – zero. The results were compared and analysed in order to reveal the apparent tendencies and (new) regularities. The accuracy was then calculated as the proportion of correctly stressed words to the total number of test words. For inferential statistics the number of accurate productions was treated as continuous values, rescaled from

0 correct realizations to maximum 32 correct realizations. The data were normally distributed.

For ease of reference, Table 3 lists the cognate equivalents of the experimental items, with the original stressed site marked in bold.

Afterwards, for those willing, individual feedback sessions on their performance were organized, where the participants were first of all informed about their scores and possible problem cases. At the same time they were able to provide insights as to what governed their performance resulting in mis-stressing the items. That, in turn, allowed us to collect valuable information for further data analysis.

Table 2
Experimental items

Syllables		Stress final	Stress penultimate	Stress antepenultimate
2	C	balloon canal	biscuits chocolate	X
	NC	enjoy	manage	
3	C	engineer	specific com puter succ essful	telephone interview com fortable in ternet par aphrase ch aracter
	NC	under stand in terrupt	to mor row re mem ber to get her appe ar ance	b utterfly be autiful cu stomer new spaper dam ages str awberry
4syllables	C	X	oper ation	tech no logy
	NC		X	dis co very adv er tisement

Table 3
Cognates stressed locus

Experimental item	Polish
b iscuits	b iskwit / biskwity
ch ocolate	czekolada
t elephone	tele f on
ch aracter	charak t er
tech n ology	technol o gia
i nternet	i nternet
spec i fic	specyf i czny
comp u ter	komput e r
oper a tion	operac j a
p araphrase	parafrazow a ć / parafraz a
i nterview	interw j u/ i nterview
co mfortable	komfortow y
su cc essful	s ukces
engine e er	inż y nier
ba loon	b alon
ca nal	k anał

3.4. The results

Let us now turn to the performance of the participants in more detail. To begin with, no statistically significant differences have been found in the overall performance in task 1 (individual words) and task 2 (targeted words in sentences) across the whole sample. The mean scores figures are tabulated below for ease of reference. The scores displayed are those for correctly applied lexical prominence.

Table 4
Stress (mis)placement rates

	Polish L1 (1024 + 1024)		
	Correct stress	Incorrect stress	Mean
Words	558	466	0.54
Sentences	597	427	0.58

The data demonstrate that whether a word was produced in isolation or in a sentence did not significantly affect the subjects' performance.

When the results are broken according to individual items, the scores show a slightly different distribution than expected and are noteworthy in that they seem to be dependent both on the native language influence of individual speakers as well as the cognate/non-cognate status of the item, to be further influenced by some other factors. The results are presented in Table 5.⁵

Table 5
Results by item

No.	Item	Polish L1		
		Correct stress	Incorrect stress	Mean score
1	manage	29	3	0.9
2	remember	21	11	0.65
3	tomorrow	19	13	0.59
4	together	25	7	0.78
5	appearance	17	15	0.53
6	damages	21	11	0.65
7	butterfly	22	10	0.68
8	customer	22	10	0.68
9	newspaper	10	22	0.31
10	beautiful	20	12	0.62
11	strawberry	17	15	0.53
12	discovery	16	16	0.5
13	advertisement	21	11	0.65
14	enjoy	23	9	0.71
15	understand	26	6	0.81
16	interrupt	21	11	0.65

⁵ The table presents the results for individual words only. For the time being a similar juxtaposition for sentences is not believed to contribute any significant insights to the picture as the scores are comparable and statistically insignificant.

17	b iscuits	25	7	0.68
18	ch ocolate	15	17	0.46
19	spe ci fic	14	18	0.43
20	comp u ter	9	23	0.28
21	su cc essful	12	20	0.37
22	t elephone	11	21	0.34
23	ch aracter	12	20	0.37
24	p araphrase	10	22	0.31
25	i nterview	14	18	0.43
26	com fortable	9	23	0.28
27	i nternet	12	20	0.37
28	te ch nology	12	20	0.37
29	ope r ation	27	5	0.84
30	eng in eer	12	20	0.37
31	bal lo on	21	11	0.65
32	can a l	13	19	0.4

Items 1–16 are forms that are not cognates (or non-borrowed items) in English and Polish. Therefore, being completely novel in terms of their form, on the whole should be easier to produce with the standard L2 stress position. This indeed appears to be case – on the whole the items are on average produced with higher accuracy than the others (with the exception of item 9 – *newspaper*). This may be in part due to high scores on items that share the native stress site.

Items 17 to 32 have cognate forms in Polish, even if not completely equivalent in terms of grammatical category or form, with one (*interview*) being the loaned item. The assumption is that due to their familiarity from the native language the subjects are more likely to copy the locus of primary stress in them. Where this is different from the target primary stress site, a conflict occurs and as a result prominence occurs on a non-canonical site. It is therefore needed to see whether the error rates for cognate and non-cognate items show significant differences. The scores as calculated by item were subjected to statistical verification. With **330** tokens (out of **512** tokens)

correctly stressed for the non-cognate items (mean: **0.64**) and **228** tokens (out of **512**) correctly stressed in the groups of cognate words (mean: **0.44**), the difference appears significant. The scores for the cognate and non-cognate items were found to be moderately correlated, $r(32) = .35$, $p = .04$. To obtain a fuller picture, data selection was performed, in that the scores for items, both cognate (5) and non-cognate (5), that have the penultimate primary stress site, that is one that is identical to the subjects' L1, were eliminated from the analysis. That left us with **22** types, **11** in each category, producing **704** tokens altogether, with the means of **0.4** and **0.62** for the cognate and non-cognate items respectively. Here the results showed an even stronger positive correlation: $r(22) = .63$, $p = .0015$. Thus the calculated r- and p-values certify to the fact that the results obtained in the study are statistically significant.

The values thus obtained show that the assumed relationship between the cognate – non-cognate status of individual items and the production of expected stress location is decisive in the light of data analysed so far. Statistically there is a correlation between the occurrence and rate of non-canonical forms and whether the item has or has not its cognate equivalent. These may not, however, be the one single factor at play.

The final bit of data, before we proceed to the discussion of the numerical material, concern the “*preferred*” location of primary word stress. In other words, if misplacement occurred, was there a consistent patterning in terms of the locus of lexical prominence or was it completely random? The bolded figures in the table below mark the number of token occurrences in the site that is consistent with the participants' L1 word-stress pattern. The italicized figures show the desired stress site.

Table 6
Misplaced locus

No.	Item	Polish L1 (N=32)			
		preantepenultimate	antepenultimate	penultimate	ultimate
1	manage	—	—	29	3
2	remember	—	11	21	0
3	tomorrow	—	13	19	0
4	together	—	7	25	0
5	appearance	—	8	17	7
6	damages	—	21	11	0
7	butterfly	—	22	10	0
8	customer	—	22	10	0
9	newspaper	—	10	22	0
10	beautiful	—	20	12	0
11	strawberry	—	17	15	0
12	discovery	7	16	9	0
13	advertisement	4	21	7	0
14	enjoy	—	—	9	23
15	understand	—	6	0	26
16	interrupt	—	6	5	21
17	biscuits	—	—	25	7
18	chocolate	—	(15)	15	17
19	specific	—	18	14	0
20	computer	—	23	9	0
21	successful	—	20	12	0
22	telephone	—	11	14	7
23	character	—	12	20	0
24	paraphrase	—	10	0	22
25	interview	—	14	2	16
26	comfortable	—	9	(23)	23

27	internet	—	12	20	0
28	technology	6	12	14	0
29	operation	5	0	27	0
30	engineer	—	20	0	12
31	balloon	—	—	11	21
32	canal	—	—	19	13

The trend towards regularizing the stress position according to what the L1 exemplar clouds prompt is visible. The L1 grammar takes over to a significant degree, therefore the individual items are transformed according to the phonological constraints of L1, frequently with complete disregard to the items' original segmental make-up, length of vowels or consonants or the stress pattern. These and other factors were mentioned by participants during the feedback session, for example *chocolate* was frequently pronounced as a three-syllable -word, with the diphthong in the last one, which attracted stress ([ʃɔkoˈleɪt]). Likewise, *successful* and *newspaper* were misstressed due to falsely-perceived analogy with the Polish cognate (**sukces**) or the English related item (**paper**). Misplaced stress in a word like *computer*, which ought to have been easy for participants, was attributed by them to the prominence given to foreignness, the regular form sounded too native to them and foreignization through stress-shift seemed a better option.

3.5. Discussion

In an experiment like the one reported on in this study, the data are collected in simulated conditions where no attempt at actual interpersonal communication is made. As such applying only the criterion of type/token frequency seems insufficient. Typically, the effects of frequency are argued to be operative above a certain threshold at which cumulative experience with words can affect representations (Brown 2015, Bybee 2001).

However, patterns of language use can be extrapolated from the data obtained in a small scale experimental design such as that applied in this study. It happens because in addition to the online effect of phonetic context during actual oral production, there is a cumulative (lexical) effect of experience in specific discourse contexts that affects the pronunciation of words (Bybee 1999, 2001). All the items researched in the study belong to the everyday active vocabulary of EFL speakers, and are characterized by a high degree of frequency occurrence, promoting the likelihood of producing the (un)modified variant. The particular circumstances within which one experiences and uses language are an important variable here.

In the present study, the subjects had to do two tasks. It has to be admitted that engaging participants in the sentence-level task was somewhat superfluous as they were not found to perform significantly differently on this task. Yet being actually exposed to and experiencing the same words out of and in a specific context is believed to promote variation and change on the one hand or, alternatively, pattern entrenchment.

A novel measure had to be made use of in this study to try and explain the regularities underlining the regular or emergent schemas. A usage-based variable FFC (*Frequency in a Favourable Context*, Brown 2015) estimates lexicalized effects of patterns of use in discourse. Employing it to our data, we claim that the effects emerge out of distinct usage properties of the two classes: cognates and non-cognates. Suprasegmental (prosodic) mismatches have been observed to be a common phenomenon, most particularly those that are related to different stress patterns in the speakers' languages. "Such mismatches are especially dangerous in the case of cognates. Learners may (and indeed do) fall into the 'same/similar form and meaning' trap between the two languages" (Yavaş 2011). It is not to do with the fact that cognate tokens emerge more frequently than the non-cognate ones. The fundamental assumption is that non-cognate items lack exemplar connections to forms sharing phonological and semantic similarity but exhib-

iting non-target-like stress patterns. To extract schemas from utterly novel exemplars than to first counteract the influence of the already existing L1 interconnections is assumed more cognitively accessible. In the data, the proportion of L1 stress pattern use is smaller with non-cognate than with cognate items. The effect of contact-induced cross-linguistic influence can then be either downplayed or increased via this contextually informed measure.

The explanation for the significant differences evident between cognate and non-cognate words is approached from within a usage-based framework, following a study by Brown (2015). She argues that the distinction between cognates and non-cognates emerges through the cumulative effect of significantly different patterns of use in discourse. Viewing bilingual language production in this way, as a specific case of variable use, predicts an outcome by which knowledge and use of one language can have predictable effects on the knowledge and use of the other language of a bilingual. According to Bybee (2001: 29), word exemplars are organized into a network of connections relating forms that are phonologically and semantically similar. Words with a high degree of phonological and semantic similarity share stronger lexical connections than words lacking such similarities. These gradient connections represent the form/meaning overlap from which morphology and to a substantial degree, phonology are emergent (Bybee 1999: 224). Their general relationship seems to be that the strong form/ meaning overlap of morphemes, therefore, allows for the possibility of influence.

Consequently, this predicts, via the same mechanism, the likelihood of mutual lexical influence between other forms with strong phonological and semantic overlap. For instance, some forms would have strong lexical connections due to the high degree of similarity in form and meaning. Good examples in our data would be items like *telephone*, *chocolate*, *character*, *technology*, used with nearly the same forms and meanings. Therefore a type of cognate effect is made apparent in the

quantitative analysis of these data. L1-like-accented forms typical of native language pronunciation for the phonological variable of word-level stress are closely associated cognitively in the lexicons of bilingual speakers to cognate pairs. Such associations bolster the strength of mis-stressed exemplars in English.

Cognates, then, transfer L1 stress pattern more often overall than non-cognates, due to their different exposure to phonetic environments conditioning the copy. The cross-linguistic phonological influence from Polish onto English in this case is at least partially lexically specific. And yet, Bybee (in Brown 2015: 402) notes that “while individual words have specific routines associated with them, their use activates the more general routines as well”. Thus, the preponderance of specific stress placement in cognates affects not just the cognate’s exemplar cloud, but also the exemplar cloud at the more general level of the lexical stress assignment routine. While such influence could predict moderate acquisition of the target stress regularities, especially compared to non-contact varieties, there is no evidence in the current data for a general change in all communicative contexts.

Sound systems on the whole are not impermeable to external influences, so it can be claimed that there must be some effect on variable phonological phenomena when alternating between languages. The hypothesised influence from the L1 would be evidenced in the increased use of L1 stress patterns and parameters, due to, first, strong stress-assignment schemas transferred from the L1 onto actual L2 production, and second, to the effects of words which share phonological (and lexical) overlap with English, that is cognates. These are transformed into an unmarked form, which in the case of stress assignment is demonstrated by assuming a default accent assignment pattern, the most general occurring in the language. This *retreat to the unmarked* may be at least partially explained, as Kang (2011) argues, not only through the influence

of native grammar, but rather by the default setting of Universal Grammar. The other mis-placements appear to stem from analogy (*successful, newspaper*), attempts at foreignization (*computer, tomorrow, interview*, cf. Yang 2014) or wrongly perceived L2 regularity (*chocolate, paraphrase*, cf. Paradis and Lacharité 2008). This observation is based on the personal feedback sessions held with the participants. Needless to say, not all effects that are felt cross-linguistically apply uniformly to all the items produced by the participants and in all contexts. Variation can be sometimes lexically specific and at times due to mechanisms other than simple one-to-one pattern transfer, such as the ones stipulated above.

The disclosed patterns predict that for words used frequently in online contexts promoting L1 stress position transfer (i.e. cognates), the likelihood of producing a non-standard form of the word increases. These non-canonical articulations increase the number (and/or strength) of the produced exemplars stored for that word. Such patterns yield different strengths of stressed/mis-stressed forms in exemplar clouds averaged across the categories. Hence, the cognate effect is submitted to be a primary effect of usage patterns, and in situations of language contact, the primacy of first language internal sources of change is highlighted.

To be able to refer back to the research questions and hypotheses formulated for this study we can summarize the findings in the following manner:

1. Given the typologically different stress-assignment principles of the subjects' L1s in relation to English, L1stress assignment pattern transfer is evident in the data.
2. Statistical analysis revealed that the non-canonical forms are influenced by the transfer to a significant degree.
3. The other mechanisms responsible for the deviations from the expected standard are stipulated to be the cognitive mechanisms of analogy (the *successful/sukces* case); wrongly perceived L2 regularity (assumed shift of stress upon suffixation

– *damages*); conscious effort to sound foreign – attempts at what is perceived as foreignization (*specific, computer*). These, however, need further examination.

4. Conclusion

It appears that participants were indeed transferring their L1 parameters and schemas relating to metrical structure (quantity (in)sensitivity, locus) onto their L2. At times they exhibit behaviour that is almost indistinguishable from that of native speakers, but it may be the case that the representations they have are actually different. On the whole, there is a substantial degree of L1 stress-assignment pattern transfer in the English as used by the participants (*retreat to the unmarked mechanism*). It is also evident that cognate items stress-pattern, whether target-like or not, is copied more faithfully than the non-cognate one, resulting in L1 influence of the default locus. In the non-conflicting items it will actually produce the desirable result. Finally, analogy and conscious effort to sound foreign can partially explain the deviant forms.

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Anita Buczek-Zawiła
ORCID iD: 0000-0002-4179-0219
Pedagogical University of Kraków
Institute of English Studies
Karmelicka 41
31-128 Kraków
Poland
anita.buczek-zawila@up.krakow.pl