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BACK TO ORTHOEPIC – SPELLING IN PRONUNCIATION INSTRUCTION: “WORDS COMMONLY MISPRONOUNCED” BY LEARNERS OF SIX L1S*

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Abstract

This is a continuation of Nowacka's (2016) study on the importance of local and global errors and spelling in pronunciation instruction. Unlike in the previous research that focused on the performance of Polish learners only, respondents of six different nationalities are included, in search of some cross-national universals or absence of them.

This study seeks to answer the following questions: whether there is a need to focus on spelling in a pronunciation course with learners representing six different L1s and if this is the case which graphophonemic / phonotactic rules of English should be explicitly taught to all of these learners and which ones might be L1 specific only.

The intention is also to empirically confirm the existence of local errors in the performance of around 240 speakers and 50 more listeners, constituting 291 listeners of six nationalities (Kazakh, Malaysian, Polish, Turkish, Tajik and Ukrainian) and to confirm the usefulness of memorizing Sobkowiak's (1996) 'Words Commonly Mispronounced' even for learners of different L1s.

Keywords: graphophonemic rules, letter-to-sound-correspondence, pronunciation instruction, spelling, 'Words Commonly Mispronounced'

1. Introduction

1.1. The correspondence between spelling and pronunciation

The issues of orthoepia and to some extent the problems of orthography are connected with the study of phonetics ... in the English language there are great discrepancies between a written version and its sound form ... to some degree English spelling is of ideographic kind. However, English spelling is not completely ideographic. It is only, especially from a descriptive perspective, very inconsistent, and therefore not very phonetic.¹ (Jassem 1971: 65)

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¹ Translation of this quote from the Polish language is mine.

In this section we intend to provide arguments for the inclusion of spelling-oriented activities, with a focus on spelling-to-sound relations and also spelling irregularities in pronunciation training as standard techniques to improve foreign learners' competence and then performance which should accompany the formation of English sound inventory and suprasegmentals.

Since the focus of this paper is spelling and its relation to pronunciation we find it appropriate to present the reader with a short background of the English spelling system. According to the English Spelling Society's report, English has 185 graphemes² for 44 sounds, as opposed to the European average of 50 spellings, which means that it is not a completely regular system and therefore learning to read and write it is more difficult than other alphabetic writing systems in which there is nearly a one-to-one relationship between their sounds and spellings, usually with spellings outnumbering sounds by just a few.

The basic English spelling system has 91 patterns ... 80 main spellings, 8 for unstressed endings, 2 prefixes and the consonants doubling rule. ... 80 English spelling patterns are undermined by one or more alternatives, e.g. [c]at – *plait*, *meringue* The greatest English reading difficulties, however, are caused by the 69 spellings which have more than one pronunciation ... They make at least 2000 English words not completely decodable. (English Spelling Society 2017a)

Carney (1994: 18) observes that in the English writing system instead of mapping phonemes on to letters we usually keep the spelling of a morpheme constant in spite of the varying pronunciation of the morpheme in different contexts, e.g. in *mime* vs. *mimic*, *sane* vs. *sanity*, *cone* vs. *conical*, and children learn both a long and a short phonemic value for the simple vowel letters, i.e. the letter <i> can stand for /aɪ/ or /ɪ/, <a> = /eɪ/ or /æ/, <o> = /əʊ/ or /ɒ/ as in the above-mentioned examples. Interestingly only in the pair of phonemes /aʊ/ - /ʌ/ do the vowel letters in spelling sometimes vary to reflect the surface difference, e.g. in *pronounce* vs. *pronunciation* but not in *south* vs. *southern*.

The 109-year-old English Spelling Society (2017b), formerly the Simplified Spelling Society, aims at promoting spelling reform and raising awareness of the problems and costs caused by the irregularity and complexity of English spelling. It has formulated six axioms on English spelling from which we learn that the alphabetic principle in the English spelling system is breeched, i.e. the letters of the alphabet, which were originally designed to represent speech sounds, do not perform their primary function well due to on-going changes in pronunciation but not in spelling over the period of the last 1,000 years. Letters do not make it easy for the reader to pronounce words from their written form, and for the writer to spell words when heard, which calls for simplification to reduce the strain on the part of language users, who need more time to master this system, and for the society as a whole because of the longitudinal costs.

² Bell (2009) points to 205 graphemes in the English spelling system.

Students have to reconcile what they say in English with how it is written. The Spelling Society website admits that English children in a naturalistic setting also struggle with associating letters with a particular sound and it takes them up to three years longer to eventually master it than it takes for those who use other alphabetic languages.

Foreign learners of English learn new words not only from the oral but also to a great extent from written sources. This leads us to try to guess the pronunciation of a word from the orthography, which is frequently not an easy task even for native-speakers. Carney (1994: 31) comments on this issue in the following way:

literacy for foreign learners of English is a special case. In the absence of a live informant, the orthography is the main indication available of the pronunciation of an unfamiliar word, short of looking it up in a pronouncing dictionary. They need, from the very beginning, some awareness of spelling-phoneme correspondences as a key to the phonetics of English and to prevent them from being misled by the writing system of their first language, in which they will usually be literate.

Jones (1932: 7) observes that “[t]he result of such inconsistencies [between pronunciation and ordinary spelling] is that the foreigner who depends solely on ordinary orthography is in innumerable cases at a loss to know what sounds should be used, and is continually mispronouncing words.”

Wells (2010, 2011c) explains the phenomenon of spelling pronunciation which happens when “[a] speaker who is familiar with the written form of a word but not with its spoken form may, on the basis of the spelling, infer a pronunciation different from the traditional or generally used one,” e.g. in *backwards* as /'bækwədʒ/ which replaced the former /bækədʒ/ or *honorarium* as /,hɒnə'reəriəm/.

Wells (2010) notes that there are two other phenomena related to the issue of spelling pronunciation. One of them is pronunciation spelling, sometimes called phonetic spelling, in which a new spelling represents the pronunciation better than the traditional one, for example that applied by Lewis (2017) in his phonetic blog, e.g. writing the word *said* as *sed* or *unstressed* as *unstrest* in the excerpt that follows “nobody: this word can be sed to have two strongforms ... /'noʊbɒdi / .. [i]s not used ...when unstrest ...” Lewis (2017). Wells (2010) also defines ‘non-spelling pronunciation,’ as “the adoption of a new pronunciation that does not match the traditional spelling,” e.g. represented by the pronunciation variant /mɪs'tʃi:viəs/ of *mischievous*, which might in the future lead to a change in spelling, e.g. *mischievius*.

We do not wish to spread the heresy that by familiarizing oneself with English spelling conventions one will assimilate all the necessary phonetic details. What we are arguing, after Carney (1994) and Wells (2011), is that being aware of spelling-to-sound correspondences is a necessary prerequisite for literate language users to read English correctly or to make informed guesses about how unfamiliar lexical items are pronounced. It is undeniable that good English pronunciation

involves acceptable performance, i.e. good articulation of English sounds and suprasegmentals combined with sufficient competence, including the skill of turning a variety of letter combinations from a written text into appropriate sounds. It appears that memorizing the pronunciation of some lexical items, whose orthography is far from transparent and whose spoken form is surprising in view of the spelling, is a routine procedure used by native and non-native learners (Bell, 2009, 2010a-b, 2015), e.g. pronouncing the diagraph <ei> irregularly as /i:/ in *ceiling*, /aɪ/ in *height* and as /e/ in *heifer*, in other words, not in accordance with the suggestion from the spelling, i.e. rendering it as /ei/ as in *veil*.

Wells (2011b) reminds us that pronunciation training, apart from letter-to-sound rules, should also encompass the above-mentioned lexical spelling

... teachers of English pronunciation need to give a lot of attention to establishing the correct target for the pronunciation of each word in the student's English vocabulary. Knowing spelling is not enough. We're all aware that the relationship between spelling and pronunciation is less than perfect. But we often don't realize how insidious the misleading effect of the orthography can be. Wild guesses are not the route to follow.

Wells (2012) gives the example of a fluent French speaker's mispronunciation of the word *idea* as ID /aɪ'di:/ leading to some confusion, and sums up that

[i]t shows that good pronunciation in EFL depends not just on being able to make the right sounds and phonemic contrasts, and to master syllable structure (clusters, final consonants etc.), but also to know the right pronunciation for every word in your vocabulary. ... And not to be misled by the spelling. (Given *sea si*: and *flea fi*:, you can see the problem.)

Wells (2011a) is a keen supporter of spelling reform, welcoming the phonetically-based *ilding a cubbard* without automatically rejecting the traditional *building a cupboard*: "I don't see the logic in insisting that the traditional spellings must no longer be permitted alongside the reformed spellings. Why not allow the two forms to co-exist, to compete if you will, until one or other becomes obsolescent and ultimately obsolete?"

In yet another blog entry, Wells (2011b), in a comment on a phonemic transcription of units of measurements in an Italian edition of *The Pond Travel Kit Inglese*, which is full of mistakes, e.g. *1 pint* as /wʌn pɪnt*/ instead of /wʌn paɪnt/ or *1 ounce* as /wʌn o:nts*³/ instead of /wʌn aʊnts/, once again emphasizes the necessity of memorizing the pronunciation of individual words: "[i]t's not just a matter of learning to make the sounds of English in an acceptable way. It's also a matter of knowing which sounds ought to be used in which words. And that's what often gets neglected."

It is frequently stated in the literature that for the development of reading skills in English a growing awareness of sound and letter correspondences plays a significant role. Ellis and Cataldo's (1990 in Carney, 1994) results prove that

³ Asterix stands for the erroneous pronunciation.

spelling is an important contributor to early reading; however, this interaction is unidirectional, which means that good reading does not predict good spelling.

The view we are taking in this study supports that one of Carney (1994: 32) who believes that “the identification of a word in reading is an informed guess and that several channels more-or-less simultaneously bring relevant information to bear, one of which channels may be spelling-to-sound correspondences.” We believe that by presenting a systematic description of some regularities of English spelling, even those that are far from straightforward, and insisting on memorizing some lexical items with inconsistent pronunciation, we would increase our learners’ competence and prepare them for making informed guesses about the rendition of unfamiliar words. Only then we might expect that regularity is in the eye of the beholder.

It is hoped that the rules we have selected for thorough practice in the classroom on the basis of the experiment might contribute to reducing the number of irregularities to be learnt on the part of a learner and in general it might lead to their acceptable, clearly understood pronunciation in English.

1.2. Classification of pronunciation errors

In the previous paper on the influence of English spelling on Polish learners’ pronunciation (Nowacka, 2016) we discussed arguments for regularity of English spelling (Upward and Davidson, 2011; Crystal, 2012), spelling-induced mispronunciations in the latest Polish research (Sobkowiak, 1996; Scheuer, 1998; Majer, 2002; Szyszka, 2003; Szpyra-Kozłowska 2005, 2013, 2015; Szpyra-Kozłowska and Stasiak, 2010; Nowacka et al., 2011; Pęzik and Zając, 2012; Bryła-Cruz, 2013; Porzuczek, 2015; Waniek-Klimczak, 2015 and Zając, 2015) and also the notion of local and global pronunciation errors (Sobkowiak, 1996; Porzuczek, 2015; Szpyra-Kozłowska, 2015).

In Nowacka’s (2016) study we implemented the classification of phonetic errors into local and global after Porzuczek (2015), which agrees with the taxonomy by Sobkowiak (1996) and Szpyra-Kozłowska (2015). To familiarize the reader with the terminology applied here we present Porzuczek’s (2015: 172) definitions of global and local errors. Global errors, caused either by L1 interference or the learners’ failure to follow the most characteristic pronunciation patterns, are reported to be easily avoided if typical spelling cues are taken into account. Unlike global mispronunciations, local ones, which are regarded as graphophonemic exceptions, can hardly be prevented by observing the graphophonemic or phonotactic rules of English. On the basis of this dual categorization Porzuczek (2015) distinguishes three major classes of erroneous pronunciation: the unavoidable local errors, further subdivided into true and ‘either-or,’ and avoidable globalized errors. Each group of these phonetic mispronunciations is further separated into 27 patterns, each referring to one aspect of English phonotactics and/or spelling-phonology relations.

It should be added that in the second- and foreign-language acquisition studies there are different classifications of language errors. For example, James (1998) introduces interlingual and intralingual errors. The former, mother-tongue induced, can be predicted and their causes can be determined, the latter, which according to Richards (1974) constitute 75% of all kinds of errors, are the result of misinterpretation of target language rules. They occur when learners engage their learning strategies and do one of the following: make false analogy or misanalysis, apply an incomplete rule or exploit redundancy, overlook co-occurrence restrictions, overuse monitor (hypercorrection), overgeneralize or simplify a system.

In the research there seem to be differences in the terminology regarding errors. For example, in his SLA framework Major (2001) divides the phonological errors into transfer and developmental ones, of which the former decrease and the latter increase over time, which means that among the intermediate and advanced learners who are the subjects of our study TL-based errors are expected to be more abundant than ones originating from L1 transfer. On the whole, interlingual errors appear to be referred to as transfer, systemic or global errors, while intralingual errors are called target-language based or developmental.

For the sake of consistency with the previous study (Nowacka, 2016) we have decided to refer to the errors as global and local ones although as argued above we are aware that this terminology might not be the most-widely used in second language acquisition research.

2. Method

2.1. Aims

In this study, we have targeted at finding categories, i.e. patterns or rules concerning letter-to-sound relations, that are not respected in the subjects' performance and recognition of an individual word and should be explicitly discussed and practised in phonetics courses. We intend to uncover the types of errors that are the most frequent in our respondents' production and recognition of words, whether avoidable globalised, 'either-or' or true local ones, as classified by Porzuczek (2015). Our final aim is to bring to light similarities and differences between speakers of different L1s, both in production and perception.

2.2. Instruments and administration

For the purpose of this study we have designed a two-task test, task one on production and task two on recognition, altogether 62 lexical items taken from Sobkowiak's (1996: 294) *Words Commonly Mispronounced* and more precisely from Porzuczek's selection of the first 373 words of the abovementioned Sobkowiak's list. Each task included 31 lexical items of Sobkowiak's (1996)

words commonly mispronounced – see Nowacka (2016) for the choice of lexical items and the questionnaire.

When it comes to test administration, there were two periods of recording sessions: the first in October 2015 with mainly Polish respondents and some Erasmus students of English at two universities; and the second in February 2016: with non-Polish respondents, on mostly science courses, who represented thirteen nationalities, after which we selected the five most numerous populations. One of the aims of the study was to examine the phonetic know-how of the freshmen of the English course before they undergo phonetic instruction. At the time of the data collection, Polish and non-Polish respondents had undergone no or hardly any prior phonetic training.

In the production task our respondents were asked to read thirty-one items together with the corresponding number and to record them. Their enunciation was then rated by the author of the text herself and classified as correct if it belonged to major standard Englishes within the scope of my knowledge. Thus, for example the renditions of *chair* as /tʃeə/ or /tʃe(ə)r/ were regarded as correct as opposed to an erroneous form /tʃɜ:/ or for the word *author* both /ˈɔːθə/ and /ˈɑːθə/ were assigned a positive mark but not the mispronunciation /ˈəʊθə/. We are fully aware that it would have been much more reliable if a greater number of judges, preferably encompassing both native and non-native varieties of English, had been involved in this evaluation.

In the recognition task, they were exposed to a recording of thirty-one items, which they could see in the test written in standard spelling. Each item was pronounced twice, they heard the two pronunciation versions in a random order one version contained standard British English pronunciation of the word while the other was a deviant Polish mispronunciation based on Sobkowiak's (1996) transcription. The subjects were required to point to the correct rendition of each item, by circling the letter A or B. Each item was repeated twice.

2.3. Subjects

There were altogether 291 participants in the study, of which 238 completed both production and recognition tasks (see Table 1).

Table 1. Bio-data

	Task 1: PRODUCTION		Task 2: RECOGNITION	
	<i>n</i>	%	<i>n</i>	%
Total	238	100	291	100
UNIVERSITY				
non-public university	129	54.2	164	56.4
public university	109	45.8	127	43.6
SYSTEM				
daily	174	73.1	217	74.6

	Task 1: PRODUCTION		Task 2: RECOGNITION	
extramural	39	16.4	46	15.8
postgraduate	25	10.5	28	9.6
SEX				
female	106	44.5	169	58.1
male	66	27.7	98	33.7
no data	66	27.7	24	8.2
NATIONALITY				
Polish	150	63.0	193	66.3
Ukrainian	36	15.1	38	13.1
Kazakh	27	11.3	27	9.3
Turkish	13	5.5	13	4.5
Tajik	7	2.9	10	3.4
Malaysian	5	2.1	10	3.4
FACULTY			<i>n</i>	%
art (English Language) (n=143)			175	73
science			63	26

The data was collected at two universities in Rzeszów, one private: the University of Information Technology and Management (164) and the other one public (127): the University of Rzeszow. There is a slight predominance of private (56.4%) over public (43.6%) students in number. In addition, they were mainly on daily (217), but also extramural (46) and postgraduate courses (28); mostly female (169) with one-third of males (98), no data was provided in 24 cases; predominantly students of Arts (175) but also Science (63).

As regards nationality, the Polish group was the most numerous (193 respondents), constituting 66.3%, then there were, in descending order: Ukrainians (38 – 13.1%), Kazakhs (27 – 9.3%), Turkish (13 – 4.5%), Tajiks (10 – 3.4%) and Malaysians (10 – 3.4%).

3. Results and discussion

3.1. Production

On the basis of lowest scoring results (including 5%–50% of correct renditions) in the ranking of 31 lexical items, representing 27 phonotactic patterns we observe that in the respondents' performance both local and global errors are present (see Table 2).

Words whose mispronunciations belong to **true local errors** such as *dough*, *above*, *southern*, *knowledge* and *area* together with one example of **either-or local errors**, that is *ancient*, obtain low scores and should be included in the core of pronunciation instruction because they are frequently mispronounced by speakers of six different L1s.

In addition, here we can also find seven rarely applied patterns, which belong to **avoidable globalised errors**, i.e. mute consonant letters (*comb* – whose frequency of use is rather low as represented by Band 5), 3 letter-to-sound vocalic rules (*old*, *layer* and *world*), 2 vowel reduction rules (*accurate*, *surface*) and a class of so-called isolated errors,⁴ encompassing 15 patterns represented by *thousand* and *pronounce*.

What this finding implies is that pronunciation training should encompass explicit instruction of some spelling conventions for the benefit of learners' pronunciation. It is thus confirmed that learn-by-rote categories from Porzuczek's (2015) division include 1 either-or local error: unpredictable pronunciation of single vowel letters (*ancient*), and 3 true local errors: words with unpredictable pronunciation (*southern*, *knowledge*, *abroad* and *says*), the sequence <ough> (*dough*) and the letter 'o,' ('<o> → □/ɒ/ - /ʌ/ - /əʊ/ - (/u:/) - (/ʊ/)' (*above*).

These results allow us to advocate the explicit instruction of some productive phonotactic rules regarding the globalised errors that our respondents have made. This group includes vowel reduction rules in stress-adjacent and stress-following syllables (*surface*) and suffixes, e.g. <ous>, <age>, <ate> (*accurate*); the ambiguous letter <o> as a whole, leading to different phonetic shapes, depending on the context, for example: '<-old> → /əʊld/; <oll> → /əʊl/ but (*doll*)' as in *old* and also the letter <o> in local errors being a part of the category 'words with unpredictable pronunciation' such as *southern*, *knowledge* and *abroad*, the occurrence of silent letters (*comb*) – the top word mispronounced by 95% of the respondents, but also a vocalic rule concerning NURSE, i.e. "stressed preconsonantal or word-final <wor>, <ur>, <ir>, <er> → /ɜ:/; <earC> → /ɜ:/ if C is not an inflectional ending (but *beard*)," and 'isolated errors' (unfamiliar to slightly more than a half of our respondents).

To our surprise the lexical item *area*, constituting a local error category of 'unpredictable word stress' scored higher than we expected (50% of correct renditions), although we know from other studies (Waniek-Klimczak, 2015) that 'stress placement' is usually problematic.

Table 2. Ranking of results for word production: task 1 (word reading)

No.	Phonotactic pattern:	FB**	Lexical item	%
1.	mute consonant letters (T.26)	5	<i>comb</i>	5%
2.	<-old> → /əʊld/; <oll> → /əʊl/ but (<i>doll</i>) (T.22)	7	<i>old</i>	8%
3.	<-aiC>, <-ay> → /eɪ/ (T.21)	6	<i>layer</i>	15%
4.	unpredictable pronunciation of single vowel letters (T.5)	6	<i>ancient</i>	20%

⁴ Porzuczek (2015:186) notes that isolated errors "can be avoided if general spelling-to-sound rules are observed, even though the actual pronunciation is not always predictable."

** FB stands for frequency band.

No.	Phonotactic pattern:	FB**	Lexical item	%
5.	unpredictable <-ough> (T.3)	5	<i>dough</i>	25%
6.	Reduce <-ous>, <-age>, and <-ate> in nouns and adjectives (T.14)	6	<i>accurate</i>	29%
7.	<o> → □/ɒ/ - /ʌ/ - /əʊ/ - (/u:/) - (/ʊ/) (T.4)	7	<i>above</i>	32%
8.	Reduce the vowel in stress-adjacent syllables and in syllables following the stressed one to /ə/ or /ɪ/. (T.13)	7	<i>surface</i>	32%
9.	words with unpredictable pronunciation (T.1)	6 7 6 6	<i>southern</i> (22%), <i>knowledge</i> (33%), <i>says</i> (43%), <i>abroad</i> (44%)	35.5%
10.	isolated errors (T.27)	6 6	<i>thousand</i> (42%), <i>pronounce</i> (46%)	44%
11.	Stressed preconsonantal or word-final <wor>, <ur>, <ir>, <er> → /ɜ:/; <earC> → /ɜ:/ if C is not an inflectional ending (but <i>beard</i>). (T.17)	7	<i>world</i>	47%
12.	unpredictable word stress (T.2)	7	<i>area</i>	50%
13.	<ou> → □/aʊ/ - (/u:/) - (/ʌ/). <ou> ≠ /əʊ/ (T.8)	6	<i>youth</i>	51%
14.	<aw> → /ɔ:/ (T.19)	7	<i>draw</i>	53%
15.	<-ought>, <-aught> → /ɔ:t/ (but <i>drought</i>) (T.18)	5	<i>taught</i>	55%
16.	<(s)waC-> → /s)wɒC/; <(s)quaC-> → /s)kwɒC/; <war(C)> → /wɔ:(C)/ (T.23)	6	<i>ward</i>	56%
17.	<air> → /eə/ (T.20)	6	<i>aircraft</i>	60%
18.	problems with voicing (T.11)	7	<i>basic</i>	60%
19.	<i> ≠ /i:/ (T.24)	6	<i>pitch</i>	63%
20.	predictable consonant voicing (T.25)	7	<i>pressure</i>	68%
21.	<ow> → □/aʊ/ - /əʊ/ (T.7)	6	<i>bowl</i>	71%
22.	<ea> → /i:/ - /e/ - (/eɪ/) (T.6)	6	<i>breathe</i>	78%
23.	Never stress the adjectival <i>-able/-ible</i> suffix. Reduce it to /-əbl/ instead. (T.15)	7	<i>available</i>	84%
24.	If unstressed <-er>, <-our> → /ə/; <-ey> → /ɪ/ (T.16)	5	<i>donkey</i>	84%
25.	<g> → □/g/ - /dʒ/ before <e>, <i>, <y> (T.12)	6	<i>target</i>	87%
26.	<ear> → □/ɪə/ - /eə/ (T.10)	6	<i>ear</i>	88%
27.	<au> → □/ɔ:/ - (/ɒ/). <au> ≠ /əʊ/, /aʊ/. (T.9)	7	<i>because</i>	90%

3.2. Recognition

In general, the results in the recognition task are higher than those for production, which results from this being an easier type of task (see Table 3).

Table 3. Ranking of results for word recognition: task 2

No	Phonotactic pattern:	FB	Lexical item	%
1.	<air> → /eə/ (T.20)	6	<i>chair</i>	22%
2.	problems with voicing (T.11)	7	<i>increase (v.)</i>	22%
3.	<ow> → □/aʊ/ - /əʊ/ (T.7)	5	<i>owl</i>	31%
4.	unpredictable pronunciation of single vowel letters (T.5)	5	<i>pint (22%), angel (61%)</i>	41.5%
5.	<-old> → /əʊld/; <oll> → /əʊl/ but (<i>doll</i>) (T.22)	6	<i>cold</i>	42%
6.	words with unpredictable pronunciation (T.1)	5	<i>failure (31%), colonel (36%), don't (59%)</i>	42.5%
7.	<(s)waC-> → /s)wəC/; <(s)quaC-> → /s)kwəC/; <war(C)> → /wə:(C)/ (T.23)	6	<i>wander</i>	45%
8.	<ou> → □/aʊ/ - (/u:/) - (/ʌ/). <ou> ≠ /əʊ/ (T.8)	6	<i>wound (n. injury)</i>	49%
9.	<-aiC>, <-ay> → /eɪ/ (T.21)	6	<i>layer</i>	57%
10.	mute consonant letters (T.26)	5 6	<i>hymn (48%), muscle (76%)</i>	62%
11.	stressed preconsonantal or word-final <wor>, <ur>, <ir>, <er> → /ɜ:/; <earC> → /ɜ:/ if C is not an inflectional ending (but <i>beard</i>). (T.17)	6	<i>worth</i>	64%
12.	predictable consonant voicing (T.25)	7	<i>though</i>	67%
13.	<au> → □/ɔ:/ - (/ʊ/). <au> ≠ /əʊ/, /aʊ/. (T.9)	7	<i>author</i>	68%
14.	reduce <-ous>, <-age>, and <-ate> in nouns and adjectives (T.14)	6	<i>enormous</i>	70%
15.	<g> → □/g/ - /dʒ/ before <e>, <i>, <y> (T.12)	6	<i>gear</i>	71%
16.	<ea> → /i:/ - /e/ - (/eɪ/) (T.6)	5	<i>sweat</i>	71%
17.	Never stress the adjectival <i>-able/-ible</i> suffix. Reduce it to /-əbl/ instead. (T.15)	6	<i>capable</i>	72%
18.	unpredictable word stress (T.2)	7	<i>develop</i>	73%
19.	<-ought>, <-aught> → /ɔ:t/ (but <i>drought</i>) (T.18)	6	<i>ought</i>	73%
20.	<o> → □/ʊ/ - /ʌ/ - /əʊ/ - (/u:/) - (/ʊ/) (T.4)	7	<i>company</i>	76%
21.	isolated errors (T.27)	6	<i>variety</i>	79%
22.	unpredictable <-ough> (T.3)	5	<i>through</i>	80%
23.	Reduce the vowel in stress-adjacent syllables and in syllables following the stressed one to /ə/ or /ɪ/.	7	<i>certain</i>	81%
24.	<ear> → □/ɪə/ - /eə/ (T.10)	6	<i>tear (n. eye water)</i>	86%
25.	<i> ≠ /i:/ (T.24)	7	<i>picture</i>	88%
26.	<aw> → /ɔ:/ (T.19)	7	<i>law</i>	90%
27.	If unstressed <-er>, <-our> → /ə/; <-ey> → /ɪ/ (T.16)	6	<i>monkey</i>	95%

The lexical items that obtained the lowest scores, i.e. under 60%, are as follows: *chair*, *increase (v.)*, *owl*, *pint*, *angel*, *cold*, *failure*, *colonel*, *don't*, *wander*, *wound* and *layer*. In this grouping we can see the same number of either-or local errors

(marked pale grey) and global ones (on a white background), and only one type of true local error (marked dark grey).

Five of the examined words include a problematic letter ‘o,’ leading to a wide array of vocalic qualities. Two of these lexical items fall into ‘words with unpredictable pronunciation’ (*colonel* and *don’t*) and others represent three letter-to-sound patterns such as: ‘<ow> → □/aʊ/ - /əʊ/’ (*owl*), ‘<ou> → □/aʊ/ - (/u:/) – (/ʌ/). <ou> ≠ /əʊ/’ (*wound* - n.), and ‘<-old> → /əʊld/; <oll> → /əʊl/ but (*doll*)’ (*cold*).

This finding agrees with Collins and Mees (2008: 112) and Zajac (2015) who note that of all the letters, the letter <o> is associated with most pronunciation irregularities. Moreover, in Bell’s (2009) classification of 69 spellings, which have more than one sound, the most numerous group concerns graphemes with the letter ‘o’ (15), i.e.

o: on - only, once, other; **-o:** go - do; **oa:** road - broad; **o-e:** bone - done, gone; **-oes:** toes - does, shoes; **-oll:** roll - doll; **-omb:** combat - bomb, *comb*, *tomb*; **oo:** boot - foot, flood; **-ot:** parrot - depot; **our:** sour - four, journey; **ou:** sound - soup, couple; **-ough:** bough - through, rough, trough; **ought:** bought - drought; **oul:** should - shoulder, mould; **ow:** how - low.

Bell (2010a) observes that

[t]he greatest difficulties in learning to read English are posed by irregular use of the letters **e** and **o**. They have variable sounds on their own (... on - only, once, other, who) and in combinations with other letters: ... bone - done, gone; sound - soup, southern, shoulder; food - flood, good; how - low. In all, 69 English spellings have more than one pronunciation and make around 2,000 relatively common words tricky for beginning readers, but the 205 with **o** ... impede reading progress most of all, because they have different pronunciation in very high frequency words.

Bell (2010a) makes a comment that the letter o and combinations with o pose a problem for beginning readers because of their different and sometimes overlapping pronunciations. She lists the main sound for each grapheme with <o> together with other likely renditions, which we summarize here: <o> as in *on* (in an onset and nucleus position) usually stands for LOT but also for: GOAT (*only*), STRUT (*other*), GOOSE (*tomb*) and FOOT (*woman*), while as a coda the letter <o> represents GOAT (*go*) and GOOSE (*do*) only; <ou> is pronounced as MOUTH (*out*) but also as GOAT (*mould*), STRUT (*couple*), GOOSE (*group*) and FOOT (*could*); two syllable words with the letters <o-e> are rendered as GOAT (*bone*) as well as STRUT (*done*) and GOOSE (*move*); <oo> leads to GOOSE (*food*), GOAT (*brooch*) and STRUT (*flood*) and <ow> sounds as MOUTH (*now*) or GOAT (*slow*).

3.3. Similarities and differences between learners with different L1s

3.3.1. Production

No statistically significant differences have been observed in the pronunciation of 10 out of 31 lexical items among learners with different L1s ($\alpha=0,05$). We present 5 phonotactic patterns in *youth*, *accurate*, *ancient*, *comb* and *southern* which are not applied by the majority (results around 50% and under with the exception of Malaysians in *youth*) (see Figure 1).

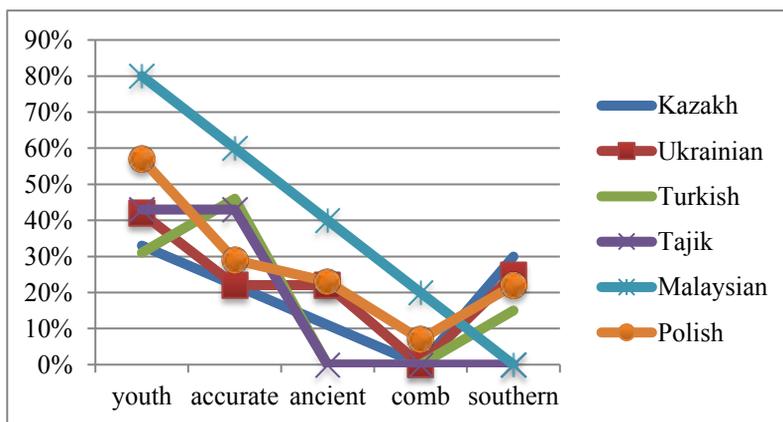


Figure 1. Statistically insignificant differences: similarities among learners with different L1s ($\alpha=0,05$) – lexical items incorrectly pronounced by the majority of respondents

The patterns causing problems to the majority of respondents, regardless of their L1, are represented by: two avoidable globalised errors, i.e. ‘reduce <-ous>, <-age>, and <-ate> in nouns and adjectives (T.14)’ - *accurate* ($p=.28845$) and ‘mute consonant letters (T.26)’ - *comb* ($p=.13778$); two ‘either-or’ local errors, i.e. ‘unpredictable pronunciation of single vowel letters (T.5)’ - *ancient* ($p=.12265$) and ‘<ou> \rightarrow \square /au/ - (/u:/) - (/ʌ/). <ou> \neq /əʊ/’ (T.8) – *youth* ($p=.05082$); and one local error of ‘words with unpredictable pronunciation (T.1)’ - *southern* ($p=.43551$).

It needs to be added that when it comes to the frequency of occurrence of the above-mentioned words, four out of five lexical items belong to band 6, except for *comb* whose frequency is lower (band 5).

What has been confirmed by these results, and what can have practical implications for pronunciation teaching to learners with six L1s, i.e. Kazakh, Ukrainian, Turkish, Tajik, Malay and Polish, is that all of them would benefit from memorization of lexical items presented under the name of words with unpredictable pronunciation (Porzuczek 2015: 173); and explicit instruction on such issues as: words with mute consonant letters, unpredictable pronunciation of single vowel letters (Porzuczek 2015: 177), the focus on the ambiguous character

of the letter <o> and especially its diagraphs and the stress reduction rule concerning suffixes <-ous>, <-age>, and <-ate> in nouns and adjectives (Porzuczek 2015: 182).

However, in the articulation of 21 lexical items representing 18 phonotactic patterns statistically significant differences have been observed among speakers of different L1s ($\alpha=0,05$) (see Table 4).

Table 4. Statistically significant differences in production among learners with different L1s

No.	Category	Lexical item	p
	LOCAL ERRORS:		
1.	words with unpredictable pronunciation (T.1)	<i>knowledge</i>	p=.00676**
		<i>says</i>	p=.00083***
		<i>abroad</i>	p=.00025***
2.	unpredictable word stress (T.2)	<i>area</i>	p=.00173**
3.	unpredictable <-ough> (T.3)	<i>dough</i>	p=.00011***
4.	<o> → □/v/ - /ʌ/ - /əʊ/ - (/u:/) - (/ʊ/) (T.4)	<i>above</i>	p=.00007***
	'EITHER-OR' LOCAL ERRORS		
5.	<ea> → /i:/ - /e/ - (/ei/) (T.6)	<i>breathe</i>	p=.00002***
6.	<au> → □/ɔ:/ - (/v/). <au> ≠ /əʊ/, /aʊ/. (T.9)	<i>because</i>	p=.00003***
7.	problems with voicing (T.11)	<i>basic</i>	p=.00015***
8.	<g> → □/g/ - /dʒ/ before <e>, <i>, <y> (T.12)	<i>target</i>	p=.03347*
	GLOBALISED (AVOIDABLE) ERRORS		
9.	Reduce the vowel in stress-adjacent syllables and in syllables following the stressed one to /ə/ or /ɪ/. (T.13)	<i>surface</i>	p=.01644*
10.	Stressed preconsonantal or word-final <wor>, <ur>, <ir>, <er> → /ɜ:/; <earC> → /ɜ:/ if C is not an inflectional ending (but <i>beard</i>). (T.17)	<i>world</i>	p=.01560*
11.	<-ought>, <-aught> → /ɔ:t/ (but <i>drought</i>) (T.18)	<i>taught</i>	p=.02895*
12.	<aw> → /ɔ:/ (T.19)	<i>draw</i>	p=.00287**
13.	<air> → /eə/ (T.20)	<i>aircraft</i>	p=.00000***
14.	<-aiC>, <-ay> → /ei/ (T.21)	<i>layer</i>	p=0.0000***
15.	<-old> → /əʊld/; <oll> → /əʊl/ but (<i>doll</i>) (T.22)	<i>old</i>	p=.01566*
16.	<(s)waC-> → /(s)wɒC/; <(s)quaC-> → /(s)kwɒC/; <war(C)> → /wɔ:(C)/ (T.23)	<i>ward</i>	p=.02350*
17.	<i> ≠ /i:/ (T.24)	<i>pitch</i>	p=.02500*
18.	isolated errors (T.27)	<i>pronounce</i>	p=.00000***
		<i>thousand</i>	p=.00128**

The variety of differences between the six nationalities in the rendition of these words does not allow us to make generalisations. Though Malaysians as second

language learners of English are the most accurate when it comes to the pronunciation of a majority of these words (see Figure 2).

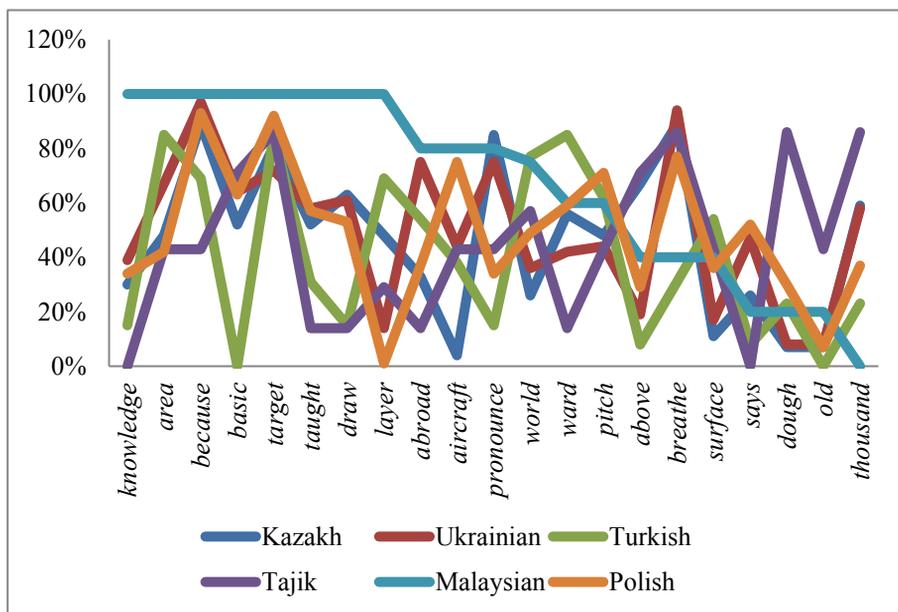


Figure 2. Statistically significant differences in production of lexical items among learners with different L1s

Our participants differ in the accuracy of pronunciation with respect to these lexical items. Each item has to be examined individually in search of similarities and differences between different L1 speakers. For example, Tajiks do not err on *dough* (86%) but other nationalities do, and Turkish students have no problem with the right quality of the vowel in *ward* but learners with the other 5 L1s show lower levels of correctness.

3.3.2. Recognition

In the recognition task there are no statistically significant differences among different L1 learners in twelve out of thirty-one cases. Three of twelve lexical items were not familiar in their pronunciation to all learners, regardless of their L1 (under 50% results), i.e. *wander*, *pint* and *increase* (see Figure 3).

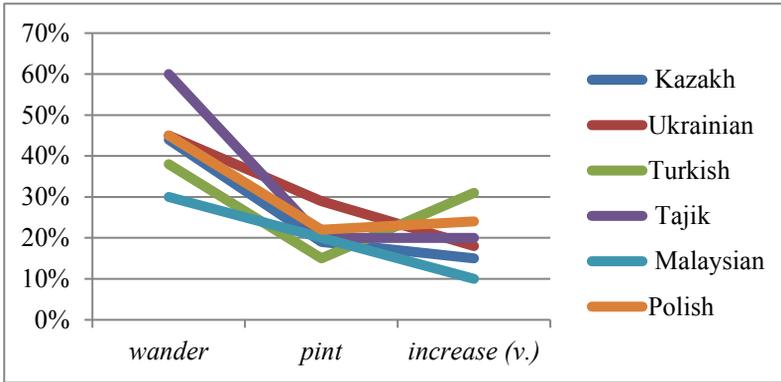


Figure 3. Statistically insignificant differences: similarities among learners with different L1s – lexical items incorrectly recognised by the majority of respondents

This group encompasses: two ‘either-or’ local errors such as ‘problems with voicing (T.11)’ - *increase (v.)* ($p=.68301$), ‘unpredictable pronunciation of single vowel letters (T.5)’ - *pint* ($p=.90008$) and one avoidable globalised error: ‘<(s)waC-> → /s)wɔC/; <(s)quaC-> → /s)kwɔC/; <war(C)> → /wɔ:(C)/ (T.23)’ - *wander* ($p=.84388$). Thus, it would be useful to find time in a practical phonetics course to make learners aware of these issues that are not known to learners with these 6 different L1s.

The remaining 19 words, constituting 16 phonotactic categories, (see Table 5), show statistically significant differences for recognition in learners of different L1 backgrounds. As was the case with production, each lexical item and the corresponding phonotactic pattern has to be examined individually due to the abundance of data, e.g. we observe similarity in the correct recognition of the pronunciation of *colonel* by Malaysians and Poles (50%) differing from other nationalities for whom the range is up to 20% (see Figure 4).

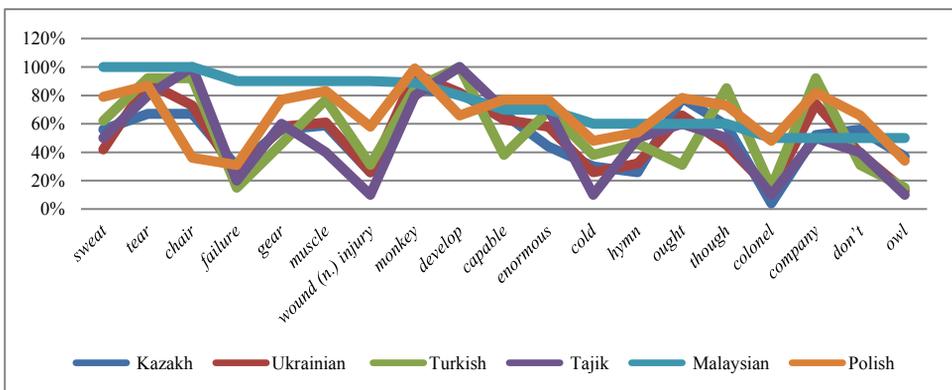


Figure 4. Statistically significant differences in recognition of lexical items among learners with different L1s

Table 5. Statistically significant differences in recognition among learners with different L1s

No.	Category	Lexical item:	p
	LOCAL ERRORS		
1.	‘words with unpredictable pronunciation (T.1)’	<i>colonel</i>	p=.00000
		<i>don't</i>	p=.00562
		<i>failure</i>	p=.00159
2.	‘unpredictable word stress (T.2)’	<i>develop</i>	p=.00853
3.	‘<o> → □/ɒ/ - /ʌ/ - /əʊ/ - (/u:/) - (/ʊ/) (T.4)’	<i>company</i>	p=.00056
	‘EITHER-OR’ LOCAL ERRORS		
4.	‘<ea> → /i:/ - /e/ - (/eɪ/) (T.6)’	<i>sweat</i>	p=.00001
5.	‘<ow> → □/aʊ/ - /əʊ/ (T.7)’	<i>owl</i>	p=.03044
6.	‘<ou> → □/aʊ/ - (/u:/) - (/ʌ/). <ou> ≠ /əʊ/ (T.8)’	<i>wound (n.)</i>	p=.00000
7.	‘<ear> → □/iə/ - /eə/ (T.10)’	<i>tear (n.)</i>	p=.04695
8.	‘<g> → □/g/ - /dʒ/ before <e>, <i>, <y> (T.12)’	<i>gear</i>	p=.00634
	GLOBALISED (AVOIDABLE) ERRORS		
9.	‘Reduce <-ous>, <-age>, and <-ate> in nouns and adjectives (T.14)’	<i>enormous</i>	p=.00930
10.	‘Never stress the adjectival -able/-ible suffix. Reduce it to /-əbl/ instead. (T.15)’	<i>capable</i>	p=.03797
11.	‘If unstressed <-er>, <-our> → /ə/; <-ey> → /i/ (T.16)’	<i>monkey</i>	p=.00046
12.	‘<-ought>, <-aught> → /ɔ:t/ (but <i>drought</i>) (T.18)’	<i>ought</i>	p=.00356
13.	<air> → /eə/ (T.20)	<i>chair</i>	p=.00305
14.	‘<-old> → /əʊld/; <oll> → /əʊl/ but (<i>doll</i>) (T.22)’	<i>cold</i>	p=.01479
15.	‘predictable consonant voicing (T.25)’	<i>though</i>	p=.00602
16.	‘mute consonant letters (T.26)’	<i>hymn</i>	p=.02435
		<i>muscle</i>	p=.00041

4. Conclusions

The results of the study confirm the necessity for explicit instruction on the regularity rather than irregularity of English spelling in order to eradicate globalised and ‘either-or’ pronunciation errors in the speech of university students with six different L1s. The avoidable globalised errors which have turned out to be the most numerous in the production task include such areas of English phonotactics as: the letters <-old> and <oll>, ‘mute consonant letters’ (all 6 L1s), ‘isolated errors’ and two categories related to the reduction of unstressed syllables: ‘reduce the vowel in stress-adjacent syllables and in syllables following the

stressed one to /ə/ or /ɪ/,' 'reduce <-ous>, <-age>, and <-ate> in nouns and adjectives' (all 6 L1s).

Once introducing spelling-to-sound relations becomes a routine procedure in pronunciation training, the strain on the part of the students of memorizing a list of local errors, phonetically challenging pronunciation exceptions, will be reduced to the absolute minimum, comprising such aspects as: the ambiguous letter <o> (all 6 L1s), 'unpredictable <-ough>,' words with unpredictable pronunciation (all 6 L1s), unpredictable pronunciation of single vowel letters (all 6 L1s) and unpredictable stress placement.

It is believed that the outcome of our research makes it easier for teachers of phonetics to decide which graphophonemic patterns should be explicitly taught in phonetic instruction. We also hope that learners' production of some phonetically challenging items will improve if they make an attempt at memorizing some spelling guidelines, which we have ranked according to their needs.

We feel obliged to admit that there are some limitations to the methodology applied. It would have been more appropriate to implement a control group in the experiment, which would have involved running the test not only in a population of non-native students but also with native speakers of English. Another issue that requires improvement is the size of the populations selected for such an analysis. The groups corresponding to nationalities should have been of more or less equal number of respondents – we could have reduced the overwhelming number of Polish respondents to make this group comparable to others.

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