

Error Analysis in English Spelling Bee Contests

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Faculty of Humanities and Social Sciences

Teaching English as a Foreign Language, MA Programme and Teaching Philosophy,
MA Programme

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Supervisor: Tanja Gradečak-Erdeljić, Associate Professor

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Summary

Spelling bee competitions are contests in which mostly younger speakers of English are pitted against each other in an attempt to find out who can spell the most complicated words for their level of English knowledge. From a linguistics standpoint, these competitions also offer a substantial amount of errors made while attempting to spell such words, which may give insight into strategies the contestants use while trying to correctly spell words. This is especially true when the contestants are not completely sure of the correct spelling.

This research focuses on types and causes of errors made in English spelling bee competitions. It includes errors made by Croatian spellers in three “Pčelica Spelica” competitions held in 2018, as well as errors made by American spellers in two “Scripps Spelling Bee” competitions held in 2017 on a regional level. The errors were divided into five categories: letter substitutions, grapheme substitutions, omissions, insertions, and transpositions. Their probable causes were then induced. The results suggest American spellers to have a better foothold in dealing with spelling of unknown words. They also show knowledge of sound-to-symbol relationships in the English language. Errors made by Croatian spellers were mostly concerned with omitting certain letters, with the majority of errors occurring when letters should have been doubled. There are also certain patterns that are shared between the two groups.

Key words: spelling, spelling bee contest, vocabulary, error analysis

Sažetak

Natjecanja u slovkanju su natjecanja u kojima se većinski mlađi govornici engleskog jezika bore jedni protiv drugih da bi doznali tko može proslovkati najkompliciranije riječi obzirom na stupanj znanja engleskog jezika. Iz lingvističke perspective, ova natjecanja nude velik broj pogrešaka učinjenih pri slovkanju, što može ponuditi uvid u strategije koje natjecatelji koriste pri slovkanju, a pogotovo kad nisu sigurni u točan način pisanja riječi.

Ovo istraživanje proučava tipove i uzroke pogrešaka počinjenih u natjecanjima u slovkanju na engleskom jeziku. U obzir su uzete pogreške koje su počinili hrvatski natjecatelji u tri natjecanja “Pčelice Spelice” održana u 2018., kao i pogreške koje su počinili američki natjecatelji u dva natjecanja “Scripps Spelling Bee” održana u 2017. na razini regije. Pogreške su podijeljene u pet kategorija: zamjena slova, zamjena grafema, izostavljanje, ubacivanje i transpozicija slova. Nakon toga, inducirani su njihovi vjerojatni uzroci. Rezultati su sugerirali bolju podlogu američkih natjecatelja što se tiče nošenja s nepoznatim riječima. Američki natjecatelji pokazali su i poznavanje odnosa zvuk-simbol u engleskom jeziku. Hrvatski natjecatelji su većinom griješili u izostavljanju slova, a pogotovo tamo gdje su slova trebala biti ponovljena. Određeni uzorci su prisutni u obje grupe.

Ključne riječi: sricanje, natjecanje pčelica spelica, vokabular, analiza pogrešaka

1. Introduction

While learning a new language is an arduous task in itself, the learning of a second language (L2) writing system may to a degree be even more difficult. The biggest obstacles in this process are found in different writing and spelling systems between two or more languages. This requires the learners to actively manage the first language (L1) writing/spelling system and prevent it from interfering (Cook, Bassetti, 2005) when using an L2 writing system. Therefore, the process of learning of an L2 writing system can be accurately distinguished as, if not completely separate, at least deserving of a place in linguistic studies.

When describing the surface level of the English language's writing system, it is generally consistent with what would be expected from a Germanic language: it is written from left to right and it uses the Latin script. However, what separates it from other system is its specific use of oral spelling. It is probably more present in English than many other languages since English speakers communicate written forms of words letter by letter, an action which does not happen in languages which have a mostly one-to-one relationship between sound and symbol such as Italian and Croatian (Cook, Bassetti, 2005). Speakers of English have embraced this feature as a part of their appreciation for the language and have been organizing competitions in spelling. While these competitions have evolved into real slugfests with the most proficient spellers successfully spelling words most people have never heard of, there are still valid and interesting patterns found in errors occurring during the competitions.

Using error analysis, this paper will examine and evaluate errors in spelling bee competitions. The first part of the paper focuses on the theoretical background behind the process of oral spelling, including the importance of symbol awareness, different possible difficulties concerning various pronunciations, the complexities of spelling, and interference issues.

The second part of the paper consists of the practical part and the discussion. The practical part deals with different types and causes of errors made in three Croatian spelling bee competitions as well as two American spelling bee competitions. The results are then compared and relevant conclusions are drawn.

2. Theoretical overview

When considering the context of a single instance of a competition known as the spelling bee, several linguistic factors are to be considered. From the point of view of the contestant, the proceedings are as follows:

1. Hearing the word
2. Employing different linguistic strategies to grasp the word structure
3. Pronunciation of the word
4. Spelling of the word

It is obvious that certain language skills are used in this process. The first part of the process depends on the participant's listening skill, and the pronunciation and spelling depend on the speaking skill. However, the situation is not as black and white as it might seem at the start. A single contestant's attempt to spell out a given word is made of heavily intertwined language skills, learning strategies and cognitive processes which transfer the word from sound to letters to sound again. These are far from straightforward as English has a huge variance in how the words are pronounced and in their expected spelling, especially when learners of English as a second language are considered. Of course, the whole premise of a spelling bee competition is reliant on the variety in the sound-to-symbol correspondence and, in its original idea, is something of a celebration in honour of this variety. However, Graham and Santos (2015) state that learners are expected to sometimes find difficult to recognize words they would otherwise know if they saw them written down. Having this in mind, several factors of the English language are to be considered. Lesiak et al. (1979) state that spelling is a task whose complexity is perhaps only evident when processes such as the speller's moving from the sound to a mental note or print, the discrimination of the correct sound, the grapheme/letter association, the order of letters, and the process of synthesis of those letters to a written or spoken form are taken into account.

2.1. Basic symbolization and graphics

After a contestant in the spelling bee competition has heard the word they have to spell, the aforementioned cognitive processes come into play. In general, they can boil down to memory, which retains the stream of sounds that was heard several moments ago, and attention, which allows for as

little complication, such as unnecessary repetition or leaving out letters, as possible at that specific moment (Čivrag, 2016). When listening, an important factor is the phonological awareness, which refers to the awareness of those units of the given spoken language which are represented in the writing system (Cook, Bassetti, 2005). There is also phonemic awareness or the conscious knowledge of the phoneme represented by the letters and the ability to recognize them in speech (ibid.). These are subconsciously used during the listening phase of spelling in both everyday life and the spelling bee.

As far as the spelling bee is concerned, it is fair to assume the contestant makes a mental note of the word by writing it down in his mind via the symbols used in the English alphabet, which is a phonographic system operating on sound segments (Treiman, Kessler, 2005). This differs from logographic systems such as the Chinese where symbols represent words and/or morphemes and from other phonographic systems which operate on syllables such as the Modern Yi, with each of the phonographic systems requiring having fewer and fewer symbols (ibid.) This, of course, helps the contestant as fewer symbols means easier recollection of how familiar words are to be spelled. There are also specific trade-offs which, when considered in the context of this paper, may be of importance to the spelling bee performance:

1. Segmentation – when listening to a constant acoustic stream, it may be more difficult to isolate every single segment, especially when talking about unfamiliar words.
2. Classification of sounds – with the reduced number of symbols in a system, it is more and more difficult to assign the same symbol to units that have the same functionality. Treiman and Kessler give the example of the words “inch” and “itch”, with the sound [i] having a certain degree of nasality in the former example which is lacking in the latter yet being spelled the same. This example is just a minuscule portion of classification problems pertaining to certain sounds which are difficult on the level of linguistics itself (ibid.).

These issues are often not taken into account when taking spelling into consideration as the speakers do not consider the meta level of the symbol system on a conscious level when trying to spell. However, it is obvious that the pros and cons of an alphabet system are present on a more practical level, as the relatively small number of symbols and the sound-to-symbol correspondence do play a huge part in spelling performance. Segmentation in particular is known to be a harsh obstacle

to overcome when introducing new learners to any language, as they hear an unbroken stream of speech and cannot distinguish where one word ends and another begins (Graham, Santos, 2015).

There is also the issue of underrepresentation in the spelling system, where different languages, for simplicity's sake, exclude distinctions of length, tone, pitch, intonation, and stress (Treiman, Kessler, 2005). While this makes writing a lot easier and presents no problem to the readers who see familiar words, problems could arise when new words with hardly distinguishable roots or etymologies are to be read. While the authors (*ibid.*) state that in this case the aforementioned suprasegmental features are mostly or completely lost as new words are often read out loud in a slow manner, the word is still recognizable and could be written down. When applying this logic to a spelling bee competition, it is clear that having more features would help the contestant in clearing up any uncertainties they might have.

Another problem worth looking into is the usage of symbols which can stand on their own yet are on seemingly random occasions used as operators to modify the pronunciation of another symbol, such as the “h” in “ship” as opposed to “h” in “hip” (*ibid.*). While seasoned English learners should not have much trouble with this, it is important to note that this occurrence adds a new layer of complexity when trying to either imagine a word's spelling or simply write it down mentally which has been mentioned to be a frequent strategy in a spelling bee.

Although primarily referring to reading, Cook (1997) gives a description of two possible pathways to saying words, a phonological route, which makes use of letter-to-sound correspondences found in sounds and words such as the sound /n/ in “son” or “bent”, and the visual route, which is more of a memory palace with words which do not completely correspond such as “yacht” or “though”. It is important to note that, even though speakers switch between these two routes depending on factors such as the difficulty, length or familiarity, the letter-to-sound correspondence route takes over when the words are completely or mostly unknown (*ibid.*). This is extremely important when applied to spelling, as using the process in reverse or trying to correspond sounds and possible letters when facing an unknown word may be the most important and utilized strategy in every spelling bee. It could, however, also lead to misspellings such as spelling “serfdom” as “surfdom” due to the word “surf” being much more dominant in everyday life than the archaic word “serf” which is not used often due to being replaced by “servant” (Cook, Bassetti, 2005).

2.2. Pronunciation and language contact

In everyday life there are numerous occurrences where, in any language, speakers pronounce words differently due to different factors, such as dialect or a local accent. Sometimes this is noticeable enough to provoke remarks, sometimes it is not. However, for young speakers of English who hear the word and are asked to write it down for the first time, this could prove to be the source of some confusion.

Treiman and Kessler (2005) suggest two simple words to explain the potential difficulty in spelling: “tin” and “ten”, which present no problem to an average English speaker. However, if these two words were to be pronounced on an average day somewhere in the southern United States, they would be pronounced extremely alike, which makes the spelling fairly unpredictable according to the authors (*ibid.*). In official contexts which do include spelling bee competitions, this should present little to no problem due to the standardization of the English language. However, this is not always the case due to human error or simple ignorance¹, and is therefore worth considering.

Other problems stem from the fact that languages borrow words and mostly retain the original spelling, and therefore the spelling that would be expected could be vastly different in contrast to the actual spelling. According to Treisman and Kessler (*ibid.*), English has borrowed many words from Latin and Greek which still retain the original spelling, and both the native English level of vocabulary and the Latinate level of vocabulary have their own morphological and phonological rules to consider, such as the spelling of the [f] sound as either “f” in native English or “ph” in Latinate words of Greek origin, which requires the speller to at least understand the possible etymologies of the words that they are tasked to spell. This problem is partly solved in the spelling bee by certain measures that will be mentioned in sections concerning the rules of the competitions.

According to Treisman and Kessler (2005), certain writing standards reflect the structure of an earlier stage of a language which can be found in such words as “which” and “witch”, which are pronounced the same in standardized English. Such retention has the advantage of not homogenizing the word pair too much so as not to upset other languages such as Irish English which does not pronounce it in the same manner, but there are also some examples of archaisms which seem to be

¹ The pronouncers in the competition are instructed to use standardized English to avoid mistakes such as wrong stress placement or wrong pronunciation of the whole word.

merely atavistic in nature, examples of which are the silent “w” in “wrist” or “k” in “knight” and are retained in none of the English-speaking systems around the world (ibid.). While this may be seen as advantageous from a writer’s viewpoint, it is necessary to perceive the difficulties that might affect the spellers themselves. This occurrence is perhaps the most troublesome and challenging to those who participate in spelling bee competitions, as homophones are notoriously tricky to spell, especially if the contestant is unaware of the homophone pair.

The issue of conservatism in spelling is further exacerbated by the fact that, as was previously mentioned, a sound may change to another sound due to other, surrounding sounds in a single word while retaining identical spelling of their roots, such as in “breath” and “breathe” (ibid.). A completely different issue is the merging of different sounds, which the authors state can happen and is happening to [lat] which, as it stands, could in standardized English be spelled as “lot”, “laut”, or even “lought”, which throws the consistency of the language for a loop (ibid.). As far as the spellers are concerned, they now have to account for a number of different possible spellings which are not as obvious as it might have been expected at the first glance. The language, of course, is a living and everchanging organism but there are not many strategies which are feasible for spellers to combat this chaotic state, barring the official rules of the spelling competition.

2.3. Spelling complexity and learning to spell

When discussing the complexity of writing systems, Treiman and Kessler (2005: 128) differentiate between transparent and opaque writing systems, where ‘transparent’ “means that the relationship between sound and symbol is obvious” and ‘opaque’ “means that it is not”. Cook and Bassetti (2005: 10) define phonological transparency as the “correspondence between the symbols and the corresponding sounds” but do not mention an opaque writing system. However, most languages are very hard to put in one or the other category. Treiman and Kessler (2005) give an example of the word “phonics” and the sounds [f] and [ks] which can be spelled with “f” and “ks” respectively. Beginners could have problems and ask themselves if the word should be spelled as “fonix”, whereas an experienced speaker could make a connection with the familiar word “telephone” and deduce the fact that “phonics” is a formal system of practice like physics and should therefore not be spelled with an “x” (ibid.). English also uses correspondence rules which rely on grammar knowledge such as knowing when “ed” is pronounced as /id/ as in “started”, /t/ as in “liked”, or /d/ as

in “stayed” (Cook, Bassetti, 2005). The spellers are therefore expected to be able to use previous knowledge and critical thinking to increase their chances of spelling a word correctly by directly tackling on many factors concerning the spelling or the pronunciation of not one, but many words in English which share one or more properties with a given word.

As was previously mentioned, segmentation problems are a common occurrence in early learning of English. Treiman and Kessler (2005) imply that the classification of segments as is standard in the English language is not something that comes naturally for some learners, and therefore the burden on memory is much higher when trying to spell unknown words. With young spellers that are not advanced in English or do not have sufficiently developed critical thinking skills, this may lead to guessing, which is not useful for error analysis besides maybe deciphering the thought process behind the spelling given by the speller.

Another problem that is especially felt in ESL learners who spell are the misleading letter names that exist in English. As an example, Treiman and Kessler (2005) suggest “w” spelled as “y” because [w] is the initial segment in y’s name, [wai]. In case of Croatian spellers in the spelling bee, more problems are expected to be encountered with the three vowels, “a”, “e”, and “i”. The reason is relatively straightforward since English “e” is pronounced as [i], the “a” is pronounced [ei] or more specifically with an audible “e” at the start, and the “i” is pronounced as [ai]. These present a big problem when trying to spell out the word rather than trying to visualize it, as the names of the letters are counter-intuitive to what is normal in the Croatian language. These problems differ depending on which language is the first language of the learner and how transparent that language is, but some issues are to be expected in all languages.

2.4. Interference and other possible issues

Another issue arises when L1 interferes as it would when two words are cognates with different phonological realisations such as that concerning the word “final” in English: /faməl/ as opposed to the same word in German: /fina:l/ (Graham, Santos, 2015). Cook and Bassetti (2005) state that spelling errors which emerge often have some symptomatic characteristics, such as the Japanese spellers’ confusion as far as sounds /l/ and /r/ go in a word such as “recently” which is often misspelled as “recentry”, “the cause being in the Japanese not differentiating between those two sounds due to

only one, medial liquid alveolar sound present in their mother tongue” (T. Gradečak-Erdeljić, personal communication, June 25, 2018). The same authors (*ibid.*) also tell of errors which are simply based on rules of the L1 writing system, such as using wrong spelling because sounds are not spelled the same across two languages, the example being the sound /ʃ/ in Welsh, which is spelled with a solitary “s” such as in “sip” and not the expected English “ship”. These examples cannot be completely and assuredly blamed on either of the spelling systems as each error, however characteristic it may be, is a standalone issue and has to be treated in that way. Either way, considering the numerous examples and on the strict level of error analysis and not error correction, the presumptions such as those shown above could be applied to spelling bees and explain some of the similar errors made.

The list of possible issues does not stop here. The relative importance of both phonological awareness and morphological awareness varies according to the writing system in question, with English learners reportedly acquiring morphemic awareness later than phonemic awareness (Cook, Bassetti, 2005). When morphological awareness is relatively attained, several other strategies can be employed, such as analogy. Campbell (1983) states that an average speller would spell a non-word such as /prein/ as “prain” if just before they heard the word “brain”, or “prane” if they heard the word “crane”. It is easy to imagine a spelling bee scenario where this proves to be a very successful strategy for the speller in dealing with an unknown word, but it could also easily prove fatal to the ambitions of the competitor.

A question may be raised that concerns the overall learners’ readiness for the described complex process of spelling. Ans Van Berkel (2005) mentions how Dutch students are in no way prepared for such a thing, with English language teaching in the Netherlands devoting no systematic attention to the subject – all kinds of written forms are thrown at the learners with no sensible plan behind them, no explanations of correspondences between sound and symbol are explained nor are any strategies for dealing with spelling difficulties offered. The spelling is something that is taken for granted and as a part and parcel of learning English (*ibid.*). Therefore, the learners are left to their own devices, such as critical thinking or finding sound-to-letter correspondences when facing unknown words. While this may present the spelling bee as a competition where talented children go on to show off their spelling prowess, the ambivalence of school systems on not properly dealing with such a huge part of learning the English language is certainly an issue to be investigated and promptly grappled with as not to allow it to set its roots deeper.

3. Methodology

The aims of this study were to investigate and categorize the errors in spelling bee competitions, as well as to compare errors made by ESL learners with those made by EFL learners. These errors were then to be contrasted in order to investigate any similarities or striking differences.

In order to examine these errors, the following research questions were devised:

- 1) Which type of spelling errors that occurred are the most common in speakers of English as a second language?
- 2) Which type of spelling errors that occurred are the most common in speakers of English as a first language?
- 3) Is there a correspondence between the errors in the two types of speakers?

3.1. Participants

The participants can be divided into two distinct groups. The first group consisted of Croatian students attending the “Pčelica Spelica” spelling bee competition on May 11th 2018, organized by “Tin Ujević” elementary school in Osijek. This group totalled 128 pupils attending 21 school from the Osijek region, divided into three age groups. The first group was made out of pupils ranging from first to fourth grade and totalled 40 pupils. The second group consisted of pupils from fifth and sixth grade and totalled 38 pupils, while the third group consisted of pupils attending seventh and eighth grade, totalling 50 pupils. The second group consisted of American students up to eight grade who attended the Scripps Spelling Bee Regionals in either Southeast South Dakota or Columbia, Missouri in 2017. These two groups of contestants totalled 29 and 60 pupils respectively. The language proficiency is impossible to accurately judge based on just spelling for either of the two major groups.

3.2. Research Design and Instruments

This study contains the aspects of both qualitative and quantitative research. In order to reach the aims of obtaining insight into the typology of errors and drawing any possible comparisons, five different spelling bee competitions were observed with all the errors noted. Three competitions were

a part of the “Pčelica Spelica” competition in 2017/2018, whereas two were part of the Scripps Spelling Bee competition on a regional level in 2017. All the errors were documented correctly as they appeared on the projector screen after an error was made. Two separate accounts of all the words heard were also kept and compared after every error.

The errors were then categorized according to the classification of spelling errors given in Brooks, Gorman, and Kendall (1993) and Cook (1997). Potential error causes were also discussed taking into consideration the age or the status of English learning.

4. Error analysis

Due to uncertainties in methodology when multiple errors are present in spelling, it becomes increasingly hard to pinpoint where one error may start and another may end. The markers of errors have to decide that for themselves and categorize these errors in some fashion. To accomplish this task without too much deviation from the standard, the same method was applied as was applied in the research done by Brooks et al. (1993) which consists of marking any error impossible to allocate any of the first four major categories to the fifth category, “grapheme substitution”. “Grapheme substitution” error type was also used when more than one single-letter error occurred in a word such as the given example of “thort” for “thought” which could perhaps also be coded as a substitution and two omissions. Where these single-letter errors did not seem to be particularly connected, they were coded as two different errors belonging to the first four error categories.

4.1. Error overview

In this overview, the following error classification offered by Brooks et al. is used (1993: 9-10):

- 1) Insertion of single letters: *untill* for *until*
- 2) Omission of a single letter: *occurring* for *occurring*
- 3) Substitution of one letter by another: *definate* for *definite*
- 4) Transposition of two letters: *freind* for *friend*
- 5) Grapheme substitution, i.e. multiple related changes: *thort* for *thought*

Cook (1997) also offers more advanced, minor types of errors which will serve as the basis for the in-depth error analysis part of the paper. For this overview, only the starting classification is used.

4.1.1. “Pčelica Spelica” spelling bee competition error overview

The rules of the “Pčelica Spelica” and “Scripps Spelling Bee” differ slightly. The most significant rules for the “Pčelica Spelica” competition are as follows:

- 1) The contestant can ask for the translation, repetition, word origin, and an example sentence.
- 2) There is no time limit.

- 3) The words are taken from standard dictionaries.
- 4) No words containing hyphens, no names, no vulgarities or conjugations.
- 5) Both British English (BrE) and American English (AmE) spellings are accepted.
- 6) Once the contestant starts spelling, they cannot start over, but they can ask for all the letters they have spelled up to that point.

Table 1. “Pčelica Spelica”, errors made by first to fourth grade spellers

| Word | Wrong spelling | Error type(s) |
|-------------|----------------|-------------------------------------|
| summer | somer | Letter substitution, omission |
| party | pirty | Letter substitution |
| niece | neace | Grapheme substitution |
| perfect | perfeckt | Insertion |
| religion | religeon | Letter substitution |
| sharpener | shrpener | Omission |
| dishwasher | dishwacher | Letter substitution |
| hungry | hungra | Letter substitution |
| friendly | frendly | Omission |
| croatian | croatan | Omission |
| always | alwys | Omission |
| canoeing | kanuan | Grapheme substitution |
| cinderella | cinderlla | Omission |
| thirsty | thursty | Letter substitution |
| coffee | cofe | Omission, omission |
| helpful | kelfo | Grapheme substitution |
| maths | math | Omission |
| waterfall | waterfol | Grapheme substitution |
| cauliflower | colifflower | Grapheme substitution, Insertion |
| interesting | intresting | Omission |

| Words of increased difficulty relative to the previous level | | |
|--|------------|--|
| trouble | truble | Omission |
| speaker | speeker | Letter substitution |
| sleeve | slaw | Grapheme substitution |
| chess | ches | Omission |
| balcony | balcon | Omission |
| documentary | doucmentry | Transposition, Omission |
| umbrella | ombrela | Letter substitution, Omission |
| pudding | puding | Omission |
| another | antoher | Transposition |
| ferry | fairy | Grapheme substitution |
| weep | weap | Grapheme substitution |
| violin | violion | Insertion |
| airport | airpot | Omission |
| clothes | close | Grapheme substitution |
| unusual | anusual | Letter substitution |
| celebrity | clebraty | Omission, Letter substitution |
| yesterday | yesturday | Letter substitution |
| calendar | calander | Letter substitution, letter substitution |
| mosquito | musciro | Grapheme substitution |
| reason | reeson | Grapheme substitution |
| Words of increased difficulty relative to the previous level | | |
| severely | sevierly | Grapheme substitution |
| mass | miss | Letter substitution |
| persuade | pursuit | Grapheme substitution |
| beginning | begginig | Insertion, Omission, Omission |
| pavement | pavenment | Insertion |
| honeymoon | honymoon | Omission |

| | | |
|------------|------------|---------------------|
| devastated | devistated | Letter substitution |
|------------|------------|---------------------|

Table 1 presents errors made in the first “Pčelica Spelica” competition featuring pupils ranging from first to fourth grade of elementary school. 47 words wrongly spelled were necessary to determine the winner, with words varying in difficulty depending on the stage of the competition. In these 47 words, 56 distinct errors were made according to the previously described categorization, the levels of which can reach highly subjective levels. The distribution of errors was as follows:

- 21 errors, or 37,5%, were omissions
- 15 errors, or 26,8%, were letter substitutions
- 13 errors, or 23,2%, were grapheme substitutions
- 5 errors, or 8,9%, were insertions
- 2 errors, 3,6%, were transpositions

Table 2: “Pčelica Spelica”, errors made by fifth and sixth grade spellers

| Word | Wrong spelling | Error type |
|------------|----------------|-----------------------|
| keyboard | keybo | Grapheme substitution |
| believe | belive | Omission |
| outdoors | outdors | Omission |
| north | nouours | Grapheme substitution |
| together | tothger | Grapheme substitution |
| snack | snake | Grapheme substitution |
| pudding | puding | Omission |
| neighbour | neibhour | Grapheme substitution |
| microwave | microvave | Letter substitution |
| dangerous | dangrous | Omission |
| everywhere | everywheree | Insertion |
| historic | historyc | Letter substitution |
| disaster | desaster | Letter substitution |
| tortoise | tortl | Grapheme substitution |

| | | |
|--|-----------------|--------------------------------|
| chance | chanch | Grapheme substitution |
| lawyer | loyar | Grapheme substitution |
| astronomy | astronmy | Omission |
| queen | quin | Grapheme substitution |
| kidnap | kadnaped | Letter substitution, Insertion |
| staff | stab | Grapheme substitution |
| suitable | sutable | Omission |
| inseparable | inseperable | Letter substitution |
| occasion | accodion | Grapheme substation |
| tongue | tounge | Transposition |
| receiver | reciver | Omission |
| murderer | murdrer | Omission |
| dynasty | dinasty | Letter substitution |
| devastated | devestated | Letter substitution |
| libretto | libreto | Omission |
| Words of increased difficulty relative to the previous level | | |
| through | thru | Grapheme substitution |
| awkward | akward | Omission |
| colleague | coleague | Omission |
| community | comunity | Omission |
| stomachache | stomacache | Omission |
| chocolate | cholocate | Transposition |
| restless | wrestless | Insertion |
| cleanliness | cleanlyness | Letter substitution |
| persuade | passwad | Grapheme substitution |
| chore | shoor | Grapheme substitution |
| jetskier | jetskiier | Insertion |
| ingredient | ingredint | Omission |
| conscientious | conshienshenest | Grapheme substitution |
| maneuver | manouver | Letter substitution |

| | | |
|------------|-----------|--|
| irrational | erational | Letter substitution, Omission |
| lieutenant | lutenent | Grapheme substitution, Letter substitution |
| dilemma | dilema | Omission |
| goddess | godess | Omission |
| fiftieth | fithieth | Grapheme substitution |

As seen in Table 2, in 48 words wrongly spelled by students competing in the second “Pčelica Spelica” spelling competition featuring pupils attending fifth and sixth grade, a total of 51 distinguishable errors were made. The level of difficulty was, according to what was said explicitly, raised by one stage as opposed to two times in the previous competition with the younger spellers. The distribution of errors is as follows:

- 17 errors, or 33,3%. were omissions
- 17 errors, or 33,3%, were grapheme substitutions
- 11 errors, or 21,6%, were letter substitutions
- 4 errors, or 7,8%, were insertions
- 2 errors, or 3,9%, were transpositions

Table 3: “Pčelica Spelica”, errors made by seventh and eighth grade spellers

| Word | Wrong spelling | Error type |
|-----------|----------------|--------------------------------|
| weather | whether | Grapheme substitution |
| tobacco | tabco | Grapheme substitution |
| anorexia | anoraex | Grapheme substitution |
| governor | gouverner | Insertion, Letter substitution |
| paralyse | paraliiz | Grapheme substitution |
| award | avard | Letter substitution |
| substance | subance | Omission, Omission |
| betrayal | betrail | Grapheme substitution |

| | | |
|-------------|------------|---|
| merchant | merchent | Letter substitution |
| admission | admition | Grapheme substitution |
| barbecue | barbecube | Insertion |
| surrounded | suraunded | Omission, Grapheme substitution |
| campaign | campaing | Transposition |
| interrupt | interupt | Omission |
| hooligan | hooling | Transposition, omission |
| route | root | Grapheme substitution, Omission |
| possess | posses | Omission |
| cello | chello | Insertion |
| appearance | apprence | Omission, Omission, Letter substitution |
| willingly | willyngly | Letter substitution |
| luggage | luggae | Omission |
| severely | severly | Omission |
| petition | petision | Letter substitution |
| restless | restlesse | Insertion |
| devastated | devesteted | Letter substitution |
| species | spicies | Letter substitution |
| succeed | sucsed | Letter substitution, Omission |
| cleanliness | clenliness | Omission |
| snobbish | snobish | Omission |
| irregular | irlar | Grapheme substitution |
| stethoscope | stetoscope | Omission |
| assistant | assitant | Omission |
| symbolize | simbolise | Letter substitution |
| difference | diferrence | Omission, Insertion |
| footwear | footwar | Omission |

| | | |
|--------------|--------------|----------------------------------|
| mayor | magour | Grapheme substitution |
| laundry | loundry | Letter substitution |
| diverse | diwerse | Letter substitution |
| weirdo | weirdue | Grapheme substitution |
| chore | choure | Insertion |
| headmistress | headmistrees | Grapheme substitution |
| heir | earoy | Grapheme substitution |
| layer | layr | Omission |
| appointment | apointement | Omission, Insertion |
| cattle | catle | Omission |
| canoeing | cannoying | Insertion, Grapheme substitution |
| unconscious | unconciuous | Omission |
| scenery | sceenery | Insertion |
| carnival | carneval | Letter substitution |
| encourage | incourage | Letter substitution |
| incapable | encapable | Letter substitution |
| tiring | tireing | Insertion |
| addiction | adiction | Omission |
| counsellor | councilor | Letter substitution, omission |
| chariot | charriot | Insertion |
| committee | comitee | Omission, omission |
| doubt | dought | Grapheme substitution |
| rebellious | rebelious | Omission |
| maintenance | maintanance | Letter substitution |
| relief | relife | Transposition |
| auxiliary | auxidiry | Grapheme substitution |
| daffodil | daffadile | Letter substitution, Insertion |
| dissolve | disolve | Omission |
| knot | knought | Grapheme substitution |

| | | |
|---------------|--------------|---------------------------------|
| borough | borrow | Grapheme substitution |
| conscientious | conciencious | Omission, Grapheme substitution |
| frequency | freqency | Omission |
| persistence | persistance | Letter substitution |
| equation | equestian | Grapheme substitution |
| queue | quee | Omission |
| immovable | immouvable | Insertion |
| mould | mold | Omission |
| prestigious | prestigeous | Letter substitution |

Table 3 shows that in 73 words wrongly spelled by students attending seventh and eight grade and competing in the third and final “Pčelica Spelica” spelling competition, a total of 88 distinct errors were made. The level of difficulty was not raised explicitly but the judges did mention that later so-called “spelling demons” had to be introduced to decide the winner. The distribution of errors is as follows:

- 31 errors, or 35,2%, were omissions
- 20 errors, or 22,7%, were grapheme substitutions
- 20 errors, or 22,7%, were letter substitutions
- 14 errors, or 15,9%, were insertions
- 3 errors, or 3,4%, were transpositions

Overall, during the three Croatian competitions 168 words were spelled inaccurately and 195 errors were made. They are distributed in the following manner:

- 69 errors, or 35,9%, were omissions
- 50 errors, or 25,6%, were grapheme substitutions
- 46 errors, or 23,6%, were letter substitutions
- 23 errors, or 11,3%, were insertions
- 7 errors, or 3,6%, were transpositions

4.1.2. “Scripps Spelling Bee” spelling competition error overview

The most significant rules for the “Scripps Spelling Bee” regional competition are as follows (*Contest Rules of the 2018 Scripps National Spelling Bee*, 2018):

- 1) The speller must not have passed beyond eight grade on February 1st.
- 2) The source of words, their spellings and pronunciations is the Merriam-Webster Unabridged dictionary, available at <http://unabridged.merriam-webster.com/>.
- 3) Any spellings listed as having identical pronunciations and definitions as well as being variants of each other are accepted as long as they are not archaic, stylistic nor regional variants.
- 4) The speller has 2 minutes to spell the given word.
- 5) The pronouncer uses the pronunciation given in the Merriam-Webster Unabridged dictionary as best to their ability. The judges can offer correct pronunciation if this is not possible for the official pronouncer.
- 6) The pronouncer indicates the possibility of a homonym by giving the definition of the given word immediately after pronouncing it the first time.
- 7) The speller can request the word to be repeated, its definition, its usage in a sentence, part of speech, language(s) of origin, and alternate pronunciation(s).

Table 4. “Scripps Spelling Bee”, errors made by spellers attending the 2017 competition in Southeast South Dakota

| Word | Wrong spelling | Type of error |
|-------------|----------------|-----------------------|
| emperor | emporer | Transposition |
| zodiac | zodiak | Letter substitution |
| prosthetic | prostetic | Omission |
| derelict | dearlic | Grapheme substitution |
| charismatic | ceresmatic | Grapheme substitution |
| sentries | centuries | Grapheme substitution |
| laburnums | lamburums | Insertion, Omission |
| antiquated | anticcauted | Grapheme substitution |

| | | |
|----------------|------------------|--|
| resonate | resinate | Letter substitution |
| pearlescent | pearlesant | Omission |
| petrifying | petrrifying | Insertion |
| boulevards | boulivards | Letter substitution |
| enumerated | unumerate | Letter substitution, Omission |
| bestial | beshel | Grapheme substitution |
| bedlam | bedlum | Letter substitution |
| prodigious | predigeous | Letter substitution, Letter substitution |
| affectionately | affectionanately | Insertion, Insertion |
| quandary | quandry | Omission |
| assailant | asalant | Omission, Omission |
| gladiatorial | gladitorial | Omission |
| aperture | apiture | Grapheme substitution |
| hypotenuse | hiputuse | Grapheme substitution |
| vagabonds | vaugbonds | Grapheme substitution |
| syncope | syncopie | Insertion |
| toccata | toccatta | Insertion |
| scenario | senerio | Omission, Letter substitution |
| babka | bobka | Letter substitution |
| precocious | percocious | Transposition |

Table 4 presents data concerning the regional part of the “Scripps Spelling Bee” competition held in Southeast South Dakota. Unlike the Croatian variant of the competition, there are no different competitions based on contestants’ age, nor is there an explicitly stated difficulty increase. To determine the champion, 28 words were wrongly spelled and a total of 35 separate errors were made. The categorization for these errors is as follows:

- 10 errors, or 28,6%, were letter substitutions
- 9 errors, or 25,7%, were omissions
- 8 errors, or 22,8%, were grapheme substitutions

- 6 errors, or 17,1%, were insertions
- 2 errors, or 5,7% were transposition

Table 5. “Scripps Spelling Bee”, errors made by spellers attending the 2017 competition in Columbia, Missouri

| Word | Wrong spelling | Type of error |
|------------|----------------|--|
| balcony | boucany | Grapheme substitution |
| futon | fouton | Insertion |
| rucksack | rocksack | Letter substitution |
| chutney | chutany | Grapheme substitution |
| stucco | stucko | Letter substitution |
| pueblo | pueplo | Letter substitution |
| jovial | jodial | Letter substitution |
| fidelity | fedilaty | Transposition |
| spitz | spits | Letter substitution |
| grotto | grado | Grapheme substitution |
| muumuu | mumu | Omission, omission |
| dugong | dugon | Omission |
| cabana | cabania | Insertion |
| gondola | gondala | Letter substitution |
| matinee | matane | Grapheme substitution |
| feldspar | feltsbar | Grapheme substitution |
| hominy | homony | Letter substitution |
| imperative | emperative | Letter substitution |
| pampas | pampus | Letter substitution |
| clapboard | claubard | Grapheme substitution |
| contiguous | contigous | Omission |
| pinafore | penefore | Letter substitution, Letter substitution |

| | | |
|---------------|---------------|---|
| discern | descern | Letter substitution |
| toucan | tucan | Omission |
| adjacent | adjasent | Letter substitution |
| Crusoe | cruso | Omission |
| isobar | icobar | Letter substitution |
| mirage | miriage | Insertion |
| jackal | gackal | Letter substitution |
| shogun | chogain | Grapheme substitution |
| innate | inate | Omission |
| mootable | mootible | Letter substitution |
| gestapo | gastapo | Letter substitution |
| lariat | lariette | Grapheme substitution |
| mantilla | matia | Grapheme substitution |
| odori | odoori | Insertion |
| vigilante | vigalante | Letter substitution |
| extravaganza | axtravaganza | Letter substitution |
| illuminati | illuminatti | Insertion |
| purga | perga | Letter substitution |
| teriyaki | terriyakki | Insertion, Insertion |
| regatta | riggata | Letter substitution, Omission, Insertion |
| klompen | clompon | Letter substitution, Letter substitution |
| impasse | impass | Omission |
| nebbish | knebbish | Insertion |
| piccolo | piccalo | Letter substitution |
| junta | hunta | Letter substitution |
| wanton | wantan | Letter substitution |
| meistersinger | meisterzinger | Letter substitution |
| chagrin | chagrenne | Grapheme substitution |

| | | |
|-------------|-------------|-------------------------------|
| picaresque | piqueresqe | Grapheme substitution |
| backgammon | bakgammon | Omission |
| sisal | sicle | Grapheme substitution |
| transept | transcept | Insertion |
| embrasure | imbrasure | Letter substitution |
| crescive | crasive | Omission |
| biscotti | biscotte | Letter substitution |
| chasuble | chausable | Grapheme substitution |
| parterre | partaire | Grapheme substitution |
| erbium | herbium | Insertion |
| batture | bateur | Grapheme substitution |
| skerry | scharie | Grapheme substitution |
| attaché | attachet | Insertion |
| ensorcel | ensorsa | Grapheme substitution |
| roux | reux | Letter substitution |
| stela | stila | Letter substitution |
| fretum | freetum | Insertion |
| somatotype | sometitype | Grapheme substitution |
| campanology | campenology | Letter substitution |
| equerry | ecquerye | Grapheme substitution |
| lassi | lasi | Omission |
| dariole | dario | Grapheme substitution |
| spessartine | spessertin | Letter substitution, Omission |
| boiserie | boiseree | Grapheme substitution |
| adret | audre | Grapheme substitution |

Table 5 shows data concerning the regional part of the “Scripps Spelling Bee” competition held in Columbia, Missouri. The same difference as before applies to this competition as compared to the Croatian one. To ascertain the eventual winner, 75 words were wrongly spelled and a total of 82 separate errors were made. The categorization for these errors is as follows:

- 33 errors, or 40,2%, were letter substitutions
- 22 errors, or 26,8%, were grapheme substitutions
- 14 errors, or 18,7%, were omissions
- 12 errors, or 16%, were insertions
- 1 error, or 1,2% was transposition

Overall, during the two American competitions 103 words were spelled inaccurately and 117 errors were made. They are distributed in the following manner:

- 42 errors, or 35,9%, were letter substitutions
- 30 errors, or 25,6%, were grapheme substitutions
- 23 errors, or 19,7%, were omissions
- 18 errors, or 15,3%, were insertions
- 3 errors, or 2,6%, were transpositions

4.2. In-depth error analysis

When discussing possible causes of spelling errors, it is almost impossible to be certain in all cases. Especially when the task is not giving the written but rather spoken reproduction of a word's spelling. The in-depth error analysis was conducted by grouping all errors of a certain type made by either L1 or L2 speakers. Then, potential causes of errors were discussed, where possible. Where multiple errors were made in a single word, the place of the error is indicated in bold letters. The ignorance of all possible sound-to-letter rules was not considered due to young age of contestants. Possible connections to known words which may indicate spelling were considered.

4.2.1. L2 speaker errors

As far as the percentages of each of the Croatian competitions compared to each other according to the age and starting difficulty level are concerned, the following data can be derived:

- Omission errors are the most present across all competitions, ranging from just over 33% to almost 37% of the errors.
- Grapheme substitutions are usually somewhat less present than omissions but have a wide range from around 25% to a whopping 33,3% when the subjects are fifth and sixth grade students.
- Letter substitutions are usually the close third, ranging from 20% to 25%.
- Insertions only had a single instance where the appearance rate was over 10%. This occurred in the competition featuring the oldest students with almost 13% appearance rate but insertions usually hovered around 8-9% appearance rate.
- Transpositions were by far the least common errors, with them hovering below 4% appearance rate in each of the competitions.

4.2.1.1. Omissions

| Word | Wrong spelling | Error cause(s) |
|------------|----------------|---|
| summer | somer | According to Cook (1997), doubled letters (and the omission of them) is a built-in problem with the English sound/letter system which affects both L1 and L2 speakers. |
| sharpener | shrpener | Unclear. The error could be attributed to ignorance or stage fright. The /a/ sound is very clear and error does not seem to bear any symptomatic relevance to others. |
| friendly | frendly | The word is pronounced without a clear /i/ sound and could therefore confuse the speller. L1 interference also possible due to the slang word “frend”. |
| Croatian | croatan | Unclear, possibly ignorance or stage fright. |
| always | alwys | Unclear, ignorance or stage fright. |
| Cinderella | cinderlla | The word could be ignorantly pronounced with the final /e/ sound “swallowed”. Assuming correct pronunciation by the judge, the speller possibly omitted the /e/ while repeating the word to themselves. |

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|--------------------|------------|--|
| co ff ee | cofe | Doubled letters. |
| co ff ee | cofe | Doubled letters. |
| maths | math | Ignorance of two different (albeit interchangeable) words. |
| interesting | intresting | The word could be pronounced in two different ways with the /ə/ sound either present or not, which could confuse the contestant. |
| trouble | truble | The /ʌ/ sound can be spelled with an “u” as in “lug”, or “ou” as in “double”. |
| chess | ches | Doubled letters. |
| balcony | balcon | L1 interference seems most likely due to Croatian word “balkon” being almost identical when compared to what was spelled. |
| documentary | doucmentry | No clear sound /a/ may confuse the speller. |
| umbrella | ombrela | Doubled letters. |
| pudding | puding | Doubled letters omission coupled with L1 interference. |
| airport | airpot | The word in question was pronounced poorly with too much stress on /o/ while the /r/ sound was not clear which might have confused the speller. |
| celebrity | clebraty | Unclear, ignorance or stage fright. |
| begin ni ng | begginig | Doubled letters. |
| begin ni ng | begginig | Unclear, ignorance or stage fright. |
| honeymoon | honymoon | The letter “e” does not produce an audible sound and was therefore omitted. |
| believe | belive | The sound /i:/ can be spelled with both “ie” as in “grief” or “i” as in “ski”. |
| outdoors | outdors | The letters “oo” are usually pronounced as either /ʌ/ or /ʊ/. However, in this instance, the grapheme is the whole “oor” segment and not just the “oo” and it should be pronounced as /ɔ:/ |
| pudding | puding | Doubled letters omission coupled with L1 interference. |

| | | |
|-------------|------------|--|
| dangerous | dangrous | Unclear. The sound /ə/ is relatively clearly pronounced. |
| astronomy | astronmy | Instead of a clear /o/ sound which may be expected, an /ə/ sound is present which may confuse the speller. |
| suitable | sutable | There are two possible pronunciations, /sju:təbl/ and /su:təbl/. The second pronunciation may mislead the speller as the first one does indicate the presence of another letter next to “u”. |
| receiver | reciver | No clear /e/ sound may confuse the speller. |
| murderer | murdrer | No clear /e/ sound may confuse the speller. |
| libretto | libreto | Doubled letters. |
| awkward | akward | The first /w/ sound is not pronounced, unlike the second one shortly after. |
| colleague | coleague | Doubled letters. |
| community | comunity | Doubled letters. |
| stomachache | stomacache | Cook (ibid.) states that reduction of consonants to one is done very often with such examples as “ch” into “h”. |
| ingredient | ingredint | Unclear. The sounds are clearly produced. |
| irrational | erational | Doubled letters. |
| dilemma | dilema | Doubled letters. |
| goddess | godess | Doubled letters. |
| substance | subance | Unclear. The sounds are clearly produced. |
| substance | subance | Unclear. The sounds are clearly produced. |
| surrounded | suraunded | Doubled letters. |
| interrupt | interupt | Doubled letters |
| hooligan | hooling | No clear sound between /g/ and /n/ may confuse the speller. |
| route | root | Homophone. |
| possess | posses | Doubled letters |
| appearance | apprence | Unclear, at least one vowel letter would be expected. |
| appearance | apprence | Unclear, at least one vowel letter would be expected. |

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|--------------------|--------------|---|
| luggage | luggae | Unclear. |
| severely | severly | The US version does not pronounce any sounds between the /r/ and /l/ which may confuse the speller. |
| succeed | sucsed | The sound /i:/ can be spelled with both “e” as in “be” and “ee” as in “bee”. |
| cleanliness | clenliness | The word “clean” is pronounced differently in “cleanliness” which may confuse the speller. |
| snobbish | snobish | Doubled letters. |
| stethoscope | stetoscope | Reduction of consonants. |
| assistant | assitant | Unclear, the sound /s/ is clearly produced. |
| difference | diferrence | Doubled letters. |
| footwear | footwar | Unclear, the sounds are clearly produced. |
| layer | layr | No clear /e/ sound may confuse the speller. |
| appointment | apoinement | Doubled letters. |
| cattle | catle | Doubled letters. |
| unconscious | unconciuous | Unclear, ignorance likely. |
| addiction | adiction | Doubled letters. |
| counsellor | councilor | Doubled letters. |
| committee | comitee | Doubled letters. |
| committee | comitee | Doubled letters. |
| rebellious | rebelious | Doubled letters. |
| dissolve | disolve | Doubled letters. |
| conscientious | conciencious | Unclear, ignorance likely. |
| frequency | frequency | No clear /u/ sound may confuse the speller. L1 interference possible due to no letter “u” in “frekvencija”. |
| queue | quee | Ignorance. |
| mould | mold | Homophones in BrE vs AmE. |

The most interesting fact these findings indicate is the prevalence of omissions concerning doubled letters. These errors happened in 28 out of 70 instances and account for an overwhelming

40%. It comes as no surprise as double letters mostly have to be learned by heart and, if the speller does not know the word, often lead to guesswork. Such is the case with the word “committee” which has three doubled letters. If learners are not aware of this particular extraordinary case yet know that the /i:/ sound can be spelled with “ee” and are aware of the word “commit”, they still do not have a good strategy to deal with the doubling of the letter “t”. Therefore, it is within the realms of real possibility that they would still spell the word incorrectly. There were 16 errors with unclear origin, which may be attributed to external factors such as stage fright, pressure, or simple ignorance of the correct word spelling. The number of errors that could be attributed to L1 interference was minuscule with three errors possibly stemming from it. Similarly, errors made because of homophones occurred in only two instances, but their absence could be attributed to the vocabulary used for the competition. Other errors include consonant reduction and simple omission due to sounds not having a clear pronunciation which may also stem from simple ignorance of the given word.

4.2.1.2. Grapheme substitutions

As was previously mentioned, grapheme substitutions are a highly subjective error categorization. Therefore, it is up to the marker to distinguish and explain why each error is a grapheme substitution, most of which pertain sound-to-letter relationships.

| Word | Wrong spelling | Error cause(s) |
|-------------|----------------|---|
| niece | neace | The sound /i:/ can be spelled with “ea” as in “meat”. |
| canoeing | kanuan | Unclear, ignorance likely. It is interesting that the speller did not recognize nor attempt to spell the “-ing” form. |
| helpful | kelfo | Unclear, ignorance likely. |
| waterfall | waterfol | British pronunciation contains /ɔ:/ while the American contains /ɑ:/. The former may confuse the speller into thinking the second part of the word is not the familiar word “fall”. |
| cauliflower | colifflower | British pronunciation contains /ɒ/ while the American contains /ɑ:/. The former may confuse the speller. |
| sleeve | slaw | Unclear. The /i:/ is unlikely to be spelled with an “a”. |

| | | |
|-----------|-----------|--|
| ferry | fairy | Near homophone. |
| weep | weap | The /i:/ can be spelled with “ea” as in “meat”. |
| clothes | close | Near homophone. |
| mosquito | musciro | Unclear, ignorance likely. |
| reason | reeson | The /i:/ can be spelled with “ee” as in “bee”. |
| severely | sevierly | The /i/ can be spelled with “ie” as in “sieve”. |
| persuade | pursuit | Unclear, ignorance likely. |
| keyboard | keybo | Unclear although the British pronunciation |
| north | nouurs | Overall unclear, although the /ɔ:/ sound can be spelled with “our” as in “four”. This does not account for the extra “u” thrown in, though. |
| together | tothger | Unclear, ignorance likely. |
| snack | snake | Unclear, ignorance or stage fright most likely |
| neighbour | neighbour | The /g/ and /h/ sounds are not pronounced. The speller probably knew there was an “h” somewhere in the word, and therefore placed it in a likely spot. |
| tortoise | tortl | Unclear, ignorance likely which led to an attempt of spelling “turtle”. |
| chance | chanch | The speller may have confused the sound /s/ with /ʃ/. |
| lawyer | loyar | The British pronunciation uses the /ɔ:/ sound which can be spelled with “aw” as in “paw”. Due to ignorance, the speller used “o”. The other error is due to the sound /ə/ which could be spelled with “er” as in “ladder” and “ar” as in “dollar”. |
| queen | quin | The sound /w/ can be spelled with “u” as in “quick”, and the sound /i:/ can be spelled with “i” as in “ski”. |
| staff | stab | Unclear. /f/ is unlikely to be spelled with “b”. |
| occasion | accodion | Unclear, ignorance likely. |
| through | thru | Unclear, ignorance likely. |
| persuade | passwad | Unclear, ignorance likely. |

| | | |
|---------------|-----------------|--|
| chore | shoor | /tʃ/ was probably mistaken for /ʃ/ which could be spelled with “sh” as in “sham”. /ɔ:/ can be spelled with “oor” as in “poor”. |
| conscientious | conshienshenest | Unclear, ignorance likely. |
| lieutenant | lutenent | The more common American pronunciation uses /u:/ which probably confused the speller due to ignorance of the exact spelling. |
| fiftieth | fithieth | Unclear, /f/ sound is clearly pronounced. |
| weather | whether | Homophones. |
| tobacco | tabco | The /ə/ sound can be spelled with “a” as in “about”, but other changes are unclear. |
| anorexia | anoraex | Unclear, ignorance likely. |
| paralyse | paraliiz | Unclear, ignorance likely. |
| betrayal | betrail | The speller may have confused the words’ spelling with the spelling of the word “trail” which is similarly pronounced. |
| admission | admitiion | The speller based their answer on the verb “admit”. |
| surrounded | suraunded | Unclear, ignorance likely due to the sound /aʊ/ unlikely to be spelled with “au”. |
| route | root | Homophones. |
| irregular | irlar | Unclear, ignorance likely. |
| mayor | magour | Unclear, ignorance likely. |
| weirdo | weirdue | Unclear, the speller may have misheard the last vowel and presumed it was /u:/ which could be spelled with “ue” as in “blue”. |
| headmistress | headmistrees | Unclear, there is no /i:/ sound which would be spelled with “ee”. |
| heir | earoy | Unclear, ignorance likely. |
| canoeing | cannoying | Unclear, ignorance likely. |
| doubt | dought | Unclear, ignorance likely. |

| | | |
|---------------|--------------|--|
| auxiliary | auxidiry | Unclear, ignorance likely. |
| knot | knought | Unclear, although “knot” and “naught” are homophones in AmE which may have confused the speller. However, “knot” is a considerably easier word to spell and should be more familiar. |
| borough | borrow | Near homophones. |
| conscientious | conciencious | The sound /ʃ/ can be spelled with “ci” as in “special” |
| equation | equestian | Unclear. Perhaps the speller misheard the /z/ sound for a /f/ sound, which would explain the presence of letter “s”. /e/ can be spelled with “e” as in “end”. |

As would probably be expected from such a subjective error categorization, 30 errors out of 50 or a whopping 60% were not clear enough to have their cause clearly induced. While ignorance can almost always be assumed to be an overarching cause to any error, some of these unclear errors had certain patterns which could explain the speller’s train of thought when trying to guess the correct spelling. Again, most other problems stemmed from the fact that the sounds could be spelled in more ways than one, and homophones or near homophones also made their presence felt with 6 errors directly or indirectly happening because of them. No L1 interference was present in any errors.

4.2.1.3. Letter substitution

As was mentioned before, letter substitutions and grapheme substitutions are semi-interchangeable due to the latter being, at least at the first glance, more complicated versions of the former. For this categorization grapheme errors with only one error in letter substitutions were considered.

| Word | Wrong spelling | Error cause(s) |
|--------|----------------|--|
| summer | somer | The sound /ʌ/ can be spelled with both “o” as in “monkey” and “u” as in “lug”. L2 interference possible due to German word “Sommer”. |
| party | pirty | Unclear, /a:/ is unlikely to be spelled with /i/. |

| | | |
|-------------|-------------|---|
| religion | religeon | The sound /ə/ can be spelled with “eo” as in “pigeon”. |
| dishwasher | dishwacher | The sound /ʃ/ can be spelled with “ch” as in “machine”, but it is unclear why the speller would not know the spelling of the root “wash”. |
| hungry | hungra | Unclear, ignorance likely. |
| thirsty | thursty | The sound /ɜ:/ can be spelled with “ur” as in “burn” as opposed to “ir” in “bird”. |
| speaker | speeker | The sound /i:/ can be spelled with “ee” as in “bee”. |
| umbrella | ombrela | The sound /ʌ/ can be spelled with “o” as in “monkey”. |
| unusual | anusual | Unclear, /ʌ/ is unlikely to be spelled with “a”. |
| celebrity | clebraty | /ə/ can be spelled with “a” as in “about”. |
| yesterday | yesturday | /ə/ can be spelled with “ur” as in “augur”. |
| calendar | calander | /ə/ can be spelled with “a” as in “about”. |
| calendar | calander | /ə/ can be spelled with “er” as in “ladder”. |
| mass | miss | Unclear, /æ/ is unlikely to be spelled with “i”. |
| devastated | devistated | /ə/ can be spelled with “i”, as in “pencil”. |
| microwave | microvave | Unclear, ignorance likely due to a foreign letter. |
| historic | historyc | /i/ can be spelled with “y” as in gym. |
| disaster | desaster | /i/ can be spelled with “e” as in “England”. |
| kidnap | kadnaped | Unclear, /i/ is unlikely to be spelled with “a”. |
| inseparable | inseperable | Unclear. The sound between “p” and “r” is not pronounced so ignorance is most likely. Connection with “separate” where there is an /ə/ sound could have helped. |
| dynasty | dinasty | /i/ can be spelled with “y” as in “gym”. |
| devastated | devestated | /ə/ can be spelled with “e” as in “parent”. |
| cleanliness | cleanlyness | /i/ can be spelled with “y” as in “gym”. |
| maneuver | manouver | /u:/ can be spelled with “ou” as in “group”. |
| irrational | erational | /i/ can be spelled with “e” as in “England”. |
| lieutenant | lutenent | /ə/ can be spelled with “e” as in “parent”. |
| governor | gouverner | /ə/ can be spelled with “e” as in “parent”. |

| | | |
|-------------|-------------|---|
| award | avard | Unclear, ignorance likely due to a foreign letter. |
| merchant | merchent | /ə/ can be spelled with “e” as in “parent”. |
| appearance | apprence | /ə/ can be spelled with “e” as in “parent”. |
| willingly | willyngly | /ɪ/ can be spelled with “y” as in “gym”. |
| petition | petision | /ʃ/ can be spelled with “si” as in “pension”. |
| devastated | devesteted | /ə/ can be spelled with “e” as in “parent”. |
| species | spicies | /i:/ can be spelled with “i” as in “ski”. |
| succeed | sucsed | /k/ can be spelled with “c” as in “cat”. |
| symbolize | simbolise | /ɪ/ can be spelled with “i” as in “it”. |
| laundry | loundry | Unclear, neither BrE pronunciation’s /ɔ:/ nor AmE pronunciation’s /ɑ:/ can be spelled with “ou”. The former can, if it is followed by “r” as in “board” or “gh” as in “bought”. |
| diverse | diwerse | Unclear, ignorance likely due to a foreign letter. |
| carnival | carneval | Possible L1 interference because of the word “karneval”. AmE pronunciation also uses the sound /ə/ instead of BrE’s /ɪ/ which may aid in confusion. |
| encourage | incourage | /ɪ/ can be spelled with “i” as in “it”. |
| incapable | encapable | /ɪ/ can be spelled with “e” as in “England”. |
| counsellor | councilor | /s/ can be spelled with “c” as in “circle”. |
| maintenance | maintanance | Unclear. Possible interference with the word “maintain”. |
| daffodil | daffadile | /ə/ can be spelled with “a” as in “about”. |
| persistence | persistance | /ə/ can be spelled with “a” as in “about”. |
| prestigious | prestigeous | /ə/ can be spelled with “e” as in “parent”. |

As far as letter substitutions are concerned, a huge majority of errors were errors which could be attributed to different possible spellings of each sound. These account for 34 out of 46 errors, or 73,9%. The rest are all relatively unclear errors which could be attributed to ignorance. Cook (ibid.) states that unstressed vowels in English are often reduced to the “schwa” sound or /ə/ but can be spelled with all three of “a”, “e”, “i”, which could explain the large rate of mistakes concerning these

vowels in particular. This categorization, however, is the first instance where confusion concerning foreign letters occurs, with “y” and “w” being the most common culprits. There are also some errors which could be attributed to interference from either English or Croatian. These, however, make up a minuscule number of total mistakes.

4.2.1.4. Insertion

| Word | Wrong spelling | Error cause(s) |
|-------------|----------------|---|
| perfect | perfeckt | The /k/ sound can be spelled with “c” or “k”, the speller probably could not decide. |
| cauliflower | colifflower | In similar fashion as in omission, letter doubling is a problem with insertion as well (ibid.). |
| violin | violion | Unclear, ignorance likely. |
| beginning | begginig | Doubled letters. |
| pavement | pavenment | Unclear, ignorance likely. |
| everywhere | everywheree | Doubled letters, although unclear why as /eə/ is unlikely to be spelled with “ee”. |
| kidnap | kadnaped | Unclear, /i/ is unlikely to be spelled with “a”. |
| restless | wrestless | Unclear, may indicate the user’s pronunciation (ibid.). |
| jetskier | jetskiier | Likely interference with the word “skiing”. |
| governor | gouverner | /ʌ/ can be spelled with “ou” as in “double”. |
| barbecue | barbecube | Unclear, there is no sound indicating the presence of “b”. |
| cello | chello | /tʃ/ is usually spelled with “ch”, but “cello” is not originally an English word. |
| restless | restlesse | Cook indicates occasional additions of the silent /e/ at the end of words (ibid.). |
| difference | diferrence | Doubled letters. |
| chore | choure | /ɔ:/ can be spelled with “our” as in “four”. |
| appointment | apointement | Unclear, perhaps a case of silent /e/ addition. |
| canoeing | cannoing | Doubled letters. |

| | | |
|-----------|------------|--|
| scenery | sceenery | Doubled letters. |
| tiring | tireing | Unclear, perhaps a case of silent /e/ addition. BrE pronunciation also has the /ə/ sound which may aid in confusion. |
| chariot | charriot | Doubled letters. |
| daffodil | daffadile | Unclear, perhaps a case of silent /e/ addition. |
| immovable | immouvable | /u:/ can be spelled with “ou” as in “group”. |

Insertion has perhaps the most variance in error causes, none of them being highly prevalent. There are seven errors that are not clearly caused by any common issue, seven errors concerning various letter doublings, five can be attributed to different possible spellings of certain sounds, two silent /e/ additions at the very end of the word, and one possible interference with a similar word. The letter doublings seem particularly concerning as they usually cannot be fixed except by learning the word by heart.

4.2.1.5. Transposition

As few as they are, transposition errors can be very difficult to pinpoint the cause of, especially when talking about a spelling bee competition. They may not be caused by any deficit in knowledge in the speller but mere miscalculation or mistake rather than a clear-cut error.

| Word | Wrong spelling | Error cause(s) |
|-------------|----------------|--|
| documentary | doucmentry | Unclear. |
| another | antoher | Unclear. |
| tongue | tounge | /ʌ/ may be spelled with “ou” as in “double”. |
| chocolate | cholocate | Unclear. |
| campaign | campaing | Unclear. Perhaps the “-ing” ending is more familiar to the speller than the /n/ spelled with “gn”. |
| hooligan | hooling | Unclear. Perhaps the “-ing” ending is more familiar to the speller than the /n/ spelled with “gn”. |

| | | |
|--------|--------|---|
| relief | relife | Unclear, although the /i:/ could be spelled with “i” as in “ski”. Could also be the case of occasional additions of the silent /e/ at the end of words (ibid.). |
|--------|--------|---|

As was indicated before the analysis, the transposition errors are few and far between. They also carry very little insight into what may have caused them, and six out of seven errors committed by L2 speakers of English were mostly unclear in their origin. Therefore, it is up to the marker to decide if the issue is rooted in ignorance or if they are simply mistakes.

4.2.2. L1 speaker errors

Assuming the spellers are of similar ability level since they have attended the same level of competition and therefore these errors were typical for the speller level, the following data can be derived:

- Letter substitution errors are the most present across both competitions, ranging from 32% to tremendous 40% of the errors.
- Grapheme substitutions do not hold a candle to omissions as far as their appearance rate is concerned. The percentages were relatively consistent with them appearing as much as 27% of the time and as little as 23% of the time.
- Omissions had a high rate of variance with an appearance rate of as much as 26% but also as little as 18%.
- Insertions had an appearance rate with a low variance rate, ranging from 14% to 15%.
- Transpositions were virtually non-existent, with both contests producing three such errors in total, with the appearance rates ranging from 6% to 1,2%. Since the second competition had a lot more words to go through, the second, lower value is more indicative of how many transposition errors were actually made.

4.2.2.1. Letter substitution

Even though the spellers are using their first language to spell and the words may be harder, the categorization stays the same as before. Letter substitutions and grapheme substitutions are still very similar and their categorization is largely left to the marker's own devices. As before, for this categorization grapheme errors with only one error in letter substitutions were considered.

| Word | Wrong spelling | Error cause(s) |
|-------------|----------------|---|
| zodiac | zodiak | /k/ can be spelled with "k" as in "kit". |
| resonate | resinate | /ə/ can be spelled with "i" as in "pencil". |
| pearlescent | pearlesant | /ə/ can be spelled with "a" as in "about". |
| boulevards | boulivards | /ə/ can be spelled with "i" as in "pencil". |
| enumerated | unumerate | /i/ can be spelled with "u" as in "busy". |
| bedlam | bedlum | Unclear. /ə/ is unlikely to be spelled with "u", even though it sounds similar to /u/ sound. |
| prodigious | predigeous | /ə/ can be spelled with "e" as in "parent". |
| prodigious | predigeous | Unclear. Possible interference from words which end in "-eous" such as "advantageous". |
| scenario | senerio | The pronunciation in AmE has the sound /e/ which can be spelled with "e" as in "end". |
| babka | bobka | /ʌ/ can be spelled with "o" as in "monkey". |
| rucksack | rocksack | /ʌ/ can be spelled with "o" as in "monkey". |
| stucco | stucko | /k/ can be spelled with "k" as in "kit". Possible interference from word "stuck". |
| pueblo | pueplo | Unclear. /b/ is unlikely to be spelled with "p". |
| jovial | jodial | Unclear. /v/ is unlikely to be spelled with "d". |
| spitz | spits | Near homophone. |
| gondola | gondala | /ə/ can be spelled with "a" as in "about". |
| hominy | homony | Unclear. /ə/ is unlikely to be spelled with "o". Possible interference from words carrying the meaning of "same" and beginning with "homo-" |
| imperative | emperative | /i/ can be spelled with "e" as in "England". |

| | | |
|---------------|---------------|---|
| pampas | pampus | Unclear, /ə/ is unlikely to be spelled with “u”, even though it sounds similar to /u/ sound. |
| pinafore | penefore | /ɪ/ can be spelled with “e” as in “England”. |
| pinafore | penefore | /ə/ can be spelled with “e” as in “parent”. |
| discern | descern | /ɪ/ can be spelled with “e” as in “England”. |
| adjacent | adjasent | /s/ can be spelled with “s” as in “sit”. |
| isobar | icobar | /s/ can be spelled with “c” as in “circle”. |
| jackal | gackal | /dʒ/ can be spelled with “g” as in “giraffe”. |
| mootable | mootible | /ə/ can be spelled with “i” as in “pencil”. |
| gestapo | gastapo | /e/ can be spelled with “a” as in “many”. |
| vigilante | vigalante | Unclear, /ɪ/ is unlikely to be spelled with “a”. |
| extravaganza | axtravaganza | Unclear, /ɪ/ is unlikely to be spelled with “a”. |
| purga | perga | /ə/ can be spelled with “e” as in “parent”. |
| regatta | riggata | /ɪ/ can be spelled with “i” as in “it”. |
| klompen | clompon | /k/ can be spelled with “c” as in “cat”. |
| klompen | clompon | Unclear, /ə/ is unlikely to be spelled with “o”. |
| piccolo | piccalo | /ə/ can be spelled with “a” as in “about”. |
| junta | hunta | Alternate pronunciation does not start with /dʒ/ but /h/ which can be spelled with “h” as in “hop”. |
| wanton | wantan | /ə/ can be spelled with “a” as in “about”. |
| meistersinger | meisterzinger | /z/ can be spelled with “z” as in “zed”. |
| embrasure | imbrasure | /ɪ/ can be spelled with “i” as in “it”. |
| biscotti | biscotte | /ɪ/ can be spelled with “e” as in “England”. |
| roux | reux | Unclear, /u:/ is unlikely to be spelled with “eu”. |
| stela | stila | /i:/ can be spelled with “i” as in “ski”. |
| campanology | campenology | /ə/ can be spelled with “e” as in “parent”. |
| spessartine | spessertin | /ə/ can be spelled with “e” as in “parent”. |

There are a lot more words of non-English origin unlike in the Croatian competition, and standardized rules may not apply to these words because of the retained spelling. This overview was

operated under the presumption that the spellers still tried to apply those rules to the unknown words as it is impossible to know how well the spellers know the rules of other languages.

It also comes as no surprise that, since these are L1 speakers of English, the errors concerning different possible spellings are the most common. 31 out of 42 errors concern different possible spellings of certain sounds, while there are only 10 errors which are more or less unclear. This does indicate that L1 spellers, when faced with such words, primarily attempt to use English spelling rules to deal with uncertainties. Only one word could have been influenced by interference and only one error was due to a near homophone.

4.2.2.2. Grapheme substitutions

| Word | Wrong spelling | Error cause(s) |
|-------------|----------------|--|
| derelict | dearlic | Unclear. Ignorance likely. |
| charismatic | cerismatic | The /e/ sound can be spelled with “e” as in “end”, while the /ɪ/ can be spelled with “e” as in “England”. |
| sentries | centuries | Near homophone. |
| antiquated | anticcauted | Unclear. Ignorance likely. |
| bestial | beshel | Unclear. Ignorance likely. |
| aperture | apiture | /ə/ can be spelled with “i” as in “pencil”. |
| hypotenuse | hiputuse | /aɪ/ can be spelled with “i” as in “spider”. Other changes unclear. |
| vagabonds | vaugbonds | /æ/ can be spelled with “au” as in “laugh”. |
| balcony | boucany | Unclear. Ignorance likely. |
| chutney | chutany | Unclear. Possible interference with words that end on /nɪ/, such as botany which made the spellers use a wrong segment of letters. |
| grotto | grado | Unclear. /t/ is unlikely to be spelled with “d”. |
| matinee | matane | Unclear. /ɪ/ is unlikely to be spelled with “a” and /eɪ/ is unlikely to be spelled with “ee”. |

| | | |
|------------|------------|---|
| feldspar | feltsbar | Unclear. /d/ is unlikely to be spelled with “t” and /p/ is unlikely to be spelled with “b”. |
| clapboard | claubard | While /æ/ can be spelled with “au” as in “laugh”, other changes are unclear. |
| shogun | chogain | While /ʃ/ can be spelled with “ch” as in “machine”, other changes are unclear. |
| lariat | lariette | /ə/ can be spelled with “e” as in “parent”. Other changes may owe themselves to the speller overly adjusting the word to foreign origin. |
| mantilla | matia | The double “l” is silent and therefore could confuse the speller. The omission of “n” is unclear. |
| chagrin | chagrenne | /ɪ/ can be spelled with “e” as in “England”, and other changes can be attributed to the speller overly adjusting the word to foreign origin. |
| picaresque | piqueresqe | /k/ can be spelled with “q(u)” as in “queen”, /ə/ can be spelled with “e” as in “parent” and the omission of “u” can be attributed to it being silent. |
| sisal | sicle | /s/ can be spelled with “c” as in “circle”, the rest of the changes are unclear although there might be some interference by words ending in “-cle” such as “icicle”. |
| chasuble | chausable | Unclear. Ignorance likely. |
| parterre | partaire | Unclear. Ignorance likely. |
| batture | bateur | Unclear. Ignorance likely. |
| skerry | scharie | Unclear, although /ɪ/ can be spelled with “ie” as in “sieve”. |
| ensorcel | ensorsa | /ə/ can be spelled with “a” as in “about”. |
| somatotype | sometitype | Unclear. Ignorance likely. |
| equerry | ecquerye | Unclear. Ignorance likely. |
| dariole | dario | Unclear. Ignorance likely. |
| boiserie | boiseree | /i:/ can be spelled with “ee” as in “bee”. |

| | | |
|-------|-------|----------------------------|
| adret | audre | Unclear. Ignorance likely. |
|-------|-------|----------------------------|

The deeper analysis of grapheme substitution errors brings a vastly different result than letter substitution error analysis. This is also the biggest argument for having such an error categorization, as dividing these errors into smaller categories would diminish the processes that go on while trying to decipher the sounds into letters. That being said, the vast majority of these mistakes are unclear and their exact causes are known to the spellers only. There is also a modest number of mistakes which are owed to interference or over-adjustment to what could possibly be expected from a word of foreign origin.

4.2.2.3. Omissions

| Word | Wrong spelling | Error cause(s) |
|--------------|----------------|--|
| prosthetic | prostetic | Unclear. /θ/ is unlikely to be spelled with “t” instead of “th”. |
| laburnums | lamburums | Unclear. /n/ is very clearly pronounced. |
| pearlescent | pearlesant | /s/ can be spelled with “s” as in “sit”. |
| enumerated | unumerate | Unclear. /d/ is clearly pronounced. |
| quandary | quandry | No sound indicating the letter “a” is pronounced. |
| assailant | asalant | As in other omission and insertion cases, doubled letters are problematic (ibid.). |
| assailant | asalant | /ei/ can be spelled with “a” as in “bay”. |
| gladiatorial | gladitorial | Unclear. Ignorance likely. |
| scenario | senerio | /s/ can be spelled with “s” as in “sit”. |
| muumuu | mumu | Doubled letters. |
| muumu | mumu | Doubled letters. |
| dugong | dugon | /ŋ/ can be spelled with “n” as in “pink”. |
| contiguous | contigous | Unclear. The letter “u” stands for the sound /ju/ so it is unclear why there would be an omission. |
| toucan | tucan | /u:/ can be spelled with “u” as in “dude”. |

| | | |
|-------------|------------|---|
| crusoe | cruso | /oo/ can be spelled with “o” as in “open”. |
| innate | inate | Doubled letters. |
| regatta | riggata | Doubled letters. |
| impasse | impass | No sound indicating the letter “e” is pronounced. Cook warns of this “silent final [e] omission” (ibid.). |
| backgammon | bakgammon | /k/ can be spelled with “k” as in “kit”. |
| crescive | resive | /s/ can be spelled with “s” as in “sit”. |
| lassi | lasi | Doubled letters. |
| spessartine | spessertin | Silent final “e” omission. |

The most prevalent errors in this analysis overview are the errors concerning multiple possible spellings. Six errors concern the omission of doubled letters, 6 errors are relatively unclear in their origin and 2 errors are concerned with the omission of final “e” which is mostly silent. It is not clear how spellers should deal with this problem if they do not know the word from before.

4.2.2.4. Insertion

| Word | Wrong spelling | Error cause(s) |
|----------------|------------------|--|
| laburnums | lamburums | Unclear. There is no sound indicating the letter “m”. |
| petrifying | pettrifying | As in other omission and insertion cases, doubled letters are problematic (ibid.). |
| affectionately | affectionanately | Unclear. There is no sound indicating a second letter “n”. |
| affectionately | affectionanately | Unclear. There is no sound indicating a third letter “a”. |
| syncope | syncopie | /i/ can be spelled with “ie” as in “sieve”. |
| toccata | toccatta | Doubled letters. |
| futon | fouton | /u:/ can be spelled with “ou” as in “group”. |
| cabana | cabania | Unclear. /ə/ is not likely to be spelled with “ia”. |
| mirage | miriage | Unclear. /a:/ is not likely to be spelled with “ia”. |
| odori | odoori | Doubled letters |
| illuminati | illuminatti | Doubled letters. |

| | | |
|----------|------------|--|
| teriyaki | terriyakki | Doubled letters. |
| teriyaki | terriyakki | Doubled letters. |
| regatta | riggata | Doubled letters. |
| nebbish | knebbish | Possible interference with words such as “knot”, “knight”. |
| transept | transcept | /s/ can be spelled with “sc” as in “scene”. |
| erbium | herbium | Unclear, although the speller might have thought the “h” is silent as in “hour”. |
| attaché | attachet | Over-adjustment for foreign language of origin. |
| fretum | freetum | Doubled letters. |

Once again, doubled letters are the most prevalent when insertion is concerned. They appeared in places they should not have eight times in total. A few errors are unclear, a few can be attributed to several possible spellings. Some of the rarer errors are the over-adjustment for foreign language and possible interference with L1 words.

4.2.2.5. Transposition

| Word | Wrong spelling | Error cause(s) |
|------------|----------------|--|
| emperor | emporer | Unclear. |
| precocious | percocious | Unclear. Possible interference from words such as “percieve”. |
| fidelity | fedilaty | The pronunciation in AmE has a /ə/ sound which can be spelled with “i” as in “pencil”, but the other mistake is unclear. |

Transpositions are usually attributed to mistakes and miscalculations while in the process of spelling. Therefore, it is not surprising they are mostly caused by unclear reasons. The only really doubtful error is the one concerning spelling the word with “per” or “pre”. Although the pronunciation is clear enough to hear the /r/ sound before the vowel, some interference may not be out of the question.

5. Discussion

Before discussing the results, research limitations should be emphasized. These include high level of subjectivity when marking different causes of errors, especially if there are several arguable solutions. Another important limitation to consider is the impossibility of knowing each contestant's level of English. Some contestants may be more proficient in English than others while there may also be contestants that are simply more talented in the field of spelling. While having more contestants with differing backgrounds makes the research broader, it does mean that fewer patterns will form and, consequently, less precise conclusions can be drawn. The potentially biggest flaw of the research, however, originates from the fact that the corpus used was not carefully selected for the research but rather done on a corpus designed for a competitive environment which is assumed to naturally contain less words which would form specific and distinguishable error patterns. The words that L1 spellers had to spell are also much harder, but the relative value of the research should still stand firm.

After analysing the most probable causes of errors, several conclusions can be drawn. Croatian spellers had the most problems with omission. In these errors, most prevalent were the errors concerning doubled letters. Since such words are almost impossible to be perfectly spelled without prior knowledge or at least knowledge of similar words and constructions, these errors are to be expected. Omissions and insertions are the two error categories which are riddled with these types of errors. The other very common errors are due to different possible spellings of certain sounds. These errors are the most appropriate to judge spellers' coping strategies, as they show their understanding of sounds although the correct spelling in the specific instance may be off.

A lot of errors also stem from unknown causes. These are most appropriately ascribed to ignorance, pressure or stage fright, with transposition being the category which houses the most of such errors by percentage. These "unclear" errors also present a big difficulty for the marker, since they cannot ever be sure what is going on inside the speller's head. The marker must take great care and assume many precautions so their criteria remain as objective as possible while still being applicable to many different varieties of errors. This is especially true when analysing grapheme substitutions. These errors can arguably be dissected into smaller ones and put into many other categories but such a task would be arduous and, as was mentioned before, potentially wrong as most of those changes are related to each other in one way or another.

The study did show certain types of errors in L2 speakers that could be symptomatic. These are errors due to foreign letters such as “y” or “w”, homophones, and L1 interference. However, the research corpus is flawed in a way that it has not been handpicked for error analysis, but rather serves a different purpose. Therefore, there have not been enough errors of either type to be able to discern clear patterns.

As far as L1 speakers go, they are expected to be much more advanced in their coping strategies and that hypothesis has been proven with them having most errors by far in the letter substitution category, which is then predominated with errors due to different possible spelling. These errors, however, may also be considered to be a symptom of some kind of intralingual interference from other words the contestants know, but were not considered as such in this research due to overcomplication. Other errors which show up frequently are owed to either unknown causes, which show up in all error categories or letter doubling, which is, as expected, present in omission and insertion error categories. One interesting error cause which shows up in L1 spelling mistakes is the possible over-adjustment for foreign words, such as in the word “lariat” which was spelled “lariette”. The speller may have expected the “-ette” spelling if they assumed the original word was of French origin, in the manner of a word such as “brunette”.

The main difference that can be drawn between the speakers of English on L1 and L2 level is the fact that L1 speakers seem more advanced in a manner that their most common errors, the letter substitutions, require a better understanding of the sound-to-letter transfer system in English. This is to be expected as they do not have to manage two writing systems at once and, more importantly, are simply more used to English than L2 speakers. The two groups are also very similar in regard of not making a lot of transposition mistakes, and those transposition mistakes that occur are mostly unclear in their origin. Omission and insertion errors are mostly based on doubled letters in both cases. Both groups also made a remarkably similar number of errors percentage-wise, with the L2 speakers making 195 errors in 168 words, or 116%, whereas L1 speakers made 117 errors in 103 words or 114%.

6. Conclusion

This research was conducted in order to explore the possibilities of patterns which may form in errors made in English spelling bee competitions. Competitions including contestants speaking L1 English and L2 English were considered. The research sought to determine the most common errors in both of the groups, examine paradigms which may form and then compare them to each other for similarities and stark differences.

It has been gathered from previously done research that oral spelling is something the English language relies on more than other languages due to not having a one-to-one relationship between sound and symbol. This feature of the language has allowed for spelling competitions to be organized and feature both speakers of both L1 and L2 English. These competitions require the contestants to employ a variety of coping strategies as they cannot be expected to know all the words by heart. To efficiently cope, however, the contestants must be able to competently consider various features of English, such as its symbolization, underrepresentation of certain distinctions such as stress or intonation, or different pronunciations. The contestants must also be able to correctly segment the sounds in the pronounced stream of sound even though they might not have ever heard it before. All of these factors must be taken into deliberation even before considering the inherent complexity of the English language. Then, a distinction between L1 and L2 speakers should be made, as L1 speakers should be better equipped to deal with unknown words and employ more coping strategies instead of plain guessing.

The analysis itself proved that L1 speakers make more errors related to letter substitution than L2 speakers which may possibly stem from knowing more possible spellings of a certain sound. L2 spellers owe most of their troubles to omission, with letter doubling proving to be the most common cause of errors. Both groups of speakers make the least amount of transposition and insertion errors, with the former being present only ten times in 312 errors.

In conclusion, the research has proven the hypothesis that, even in a non-selected corpus, patterns in spelling errors will occur. The knowledge of these patterns is crucial to determine effective strategies in combating them so the last resort of learning words by heart is used only sparingly. The choice of these strategies ultimately depends on the teacher. In any case, presence of such patterns

must not be underestimated as similar spelling mistakes may occur in both oral and written spelling. These competitions can also serve as a good way for both children and English instructors to instil awareness of word etymology, different pronunciations, and both intralingual and interlingual interference.

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8. Appendix

1. “Pčelica Spelica” rules and regulations

PRIRUČNIK

UVJETI PODOBNOSTI:

Natjecanje je podijeljeno u tri razine po starosnim skupinama. Podobni su oni učenici kojima engleski nije materinji jezik, te koji nisu pohađali školu na engleskom govornom području. Svaka škola ima pravo delegirati po 2 ili 3 natjecatelja za svaku razinu.

KATEGORIJA NATJECANJA: sricanje (spelling bee).

Učenici sriču zadanu riječ na engleskom jeziku (izbor riječi prilagođen je uzrastu po razinama).

Natjecatelj ima pravo tražiti :

- Prijevod riječi
- Porijeklo riječi
- Upotrebu riječi u rečenici

Komisija je dužna razgovjetno ponoviti riječ natjecatelju na njegov zahtjev.

Natjecatelj nije vremenski ograničen.

Izvori riječi su standardni rječnici.

Riječi koje neće biti izabrane su

- Riječi s crticom (x-ray)
- Imena i nazivi (New York)
- Psovke
- Sprezani oblici glagola (going, threw, does)

PRIMJER:

Član ocjenjivačkog povjerenstva izgovori zadanu riječ.

Natjecatelj PONOVI riječ.

Natjecatelj sriče riječ. Natjecatelj ima pravo prije ili za vrijeme sricanja postaviti pitanje komisiji, ali ono što je IZGOVORENO, to se boduje. Odnosno, izgovorena slova se ne mogu ispraviti.

Nakon sricanja učenik ponovi riječ.

Ocjenjivačko povjerenstvo po sricanju daje zajedničku odluku- CORRECT ili INCORRECT.

U PRVOM ELIMINACIJSKOM KRUGU natjecatelji sriču dvije riječi. Učenik ima pravo JEDANPUT pogriješiti u riječi, te tako ima pravo proći u DRUGI KRUG.

U DRUGOM ELIMINACIJSKOM KRUGU učenik nema pravo pogriješiti, već gubi pravo na daljnje sudjelovanje.

Kada u natjecanju ostanu samo dva učenika, mijenjaju se pravila eliminacije. Ukoliko prvi učenik netočno sriče riječ, drugi učenik je ima priliku sricati. Ukoliko drugi učenik točno riješi zadanu riječ, on je pobjednik.

Ukoliko i drugi učenik netočno sriče istu riječ,

natjecanje se nastavlja s novom zadanom riječju. U obzir se uzima i britanski i američki način sricanja (honour=honor).