

WRITING PROFICIENCY IN TRANSPARENT ORTHOGRAPHS: WHEN DO ROMANIAN CHILDREN START TO SPELL CORRECTLY?

DACIAN DORIN DOLEAN*, DANIEL ANDRONACHE**

ABSTRACT. Spelling abilities of elementary and middle school students can vary across languages. One major variable that influences students' spelling performance is the degree of orthographic regularity of their native language. In our study, we measured the writing performance of four hundred and forty four Romanian students attending 2nd, 3rd, 4th, 6th and 8th grade of the same school. Results indicated that overall, there were no significant differences in spelling performance of students after 3rd grade. They also suggest that learning the phoneme-grapheme correspondence of regular words reaches ceiling within the 1st year of instruction (97% proficiency). Limitations of this study are being addressed.

Keywords: *spelling; orthography; writing; phonemes, graphemes.*

ZUSAMMENFASSUNG. Rechtsschreibfähigkeiten der Grund- und Mittelschüler/innen können über Sprachen variieren. Eine wesentliche Variable, die die Rechtsschreibfähigkeit der Schüler beeinflussen kann, ist der Grad der orthographischen Regelmäßigkeit ihrer Muttersprache. Im Rahmen unserer Studie haben wir die Schreibleistung von vier hundert vierundvierzig rumänischen Schülern der Jahrgangstufen 2, 3, 4, 6 und 8 der gleichen Schule. Die Ergebnisse haben gezeigt, dass es insgesamt keine bedeutenden Unterschiede der Schreibleistung der Schüler nach der 3. Jahrgangstufe gaben. Die Ergebnisse weisen auch darauf hin, dass das Erlernen der Phoneme-Grapheme-Korrespondenz der regelmäßigen Wörter die Obergrenze innerhalb des ersten Unterrichtsjahres erreicht (97% Leistung). Einschränkungen dieser Studie sind angesprochen.

Schlüsselwörter: *rechtschreibung; schreiben; phonemen; graphems.*

* PhD Student, Babes Bolyai University, Cluj-Napoca, darisclub@gmail.com

** PhD Student, Babes Bolyai University, Cluj-Napoca, daniel_cosminandronache@yahoo.com

INTRODUCTION

Among the main priorities and challenges in education is improving literacy and writing proficiency of school age children, as a prerequisite of success in adulthood and in the workplace. Lagging behind those basic skills will result in poor performance during subsequent school years, in most subjects. One particular aspect of writing proficiency is the spelling ability. Students who struggle to spell the words correctly lose important cognitive resources that they need for higher-level writing skills (Singer & Bashir, 2004), which is detrimental not only to writing fluency and proficiency but also to their overall school performance.

The development of writing proficiency (and spelling performance in particular) can vary from one language to another – and so does the national education priorities. For instance, the German/Austrian kindergarten system does not provide language instruction to children prior entering the school, while in the US children are taught letters before they start school (Landerl & Wimmer, 2008). In a study conducted by Mann and Wimmer (2002), the kindergarteners from US and Austria were given a letter naming task. Results indicated a 90% proficiency of US students, but only 30% proficiency of students from Austria. However, it is reported that German speaking students can produce adequate grapheme for most phoneme sequences after only a few months of formal instruction (Wimmer & Landerl, 1997), and spell correctly at the end of the first year of instruction, while, based on Common Core State Standards for English and Language Arts, by the end of the 1st grade English speaking students from US are expected to “use conventional spelling for words with common spelling”, between 2nd and 5th grade they are expected to “spell grade-appropriate words correctly”, and only by 6th grade they are expected to “spell correctly” (Reed, 2012, p. 44-48).

How can we explain this?

English language has an opaque (or deep) orthography, that means the majority of words are not being written the way they sound. English alphabet has 26 letters to express 44 phonemes, and produce more than 500 spellings (Tompkins, 1998), or according to another source (Nyikos, 1988), at least 1680 different spellings. Thus, besides a good phonological awareness, learning how to spell well in English requires a high degree of word knowledge, good memory, visual cues, exposure to high-frequency words and phonics (Loeffler, 2005).

On the other hand, several other alphabetic languages have a rather transparent (or shallow) orthography, meaning that they have an almost one-on-one phoneme-grapheme correspondence. For instance, “in Finnish, each letter of the alphabet is represented by one and only one sound” (Seymour, Aro & Erskine, 2003). In Italian, students learn how to spell correctly the regular words from the first year, and within the first 3 years of schooling, they are able

to spell correctly ambiguous words, context-sensitive words and pseudowords (Notarnicola, Angelelli, Judica & Zoccolotti, 2012). Similar data was also found for children learning how to spell in fairly transparent orthographies, like Czech, Turkish, German and Spanish (Caravolas, 2004). That means students who learn how to spell in a writing system that has a rather transparent orthography need a good enough phonological awareness to discriminate between phonemes, the ability to identify/produce about 20-30 letters of the alphabet, and the ability to make the phoneme-grapheme connection.

PRESENT STUDY

Romanian language has a highly transparent orthography like most other European languages, and the spelling of words is highly regular (most phonemes have a direct grapheme correspondent). According to the national curriculum for elementary education approved by Governmental Order no. 4686 / 05.08.2003, no. 5198 / 01.11.2004, and 3919 / 20.04.2005, by the end of the 1st grade the students are expected to learn to write all letters of the alphabet, to use capital letters at the beginning of the sentence and for proper nouns, to properly use of diacritics, to properly use the irregular spellings of groups of letters frequently used (“ce”, “ci”, “ge”, “gi”, “che”, “chi”, “ghe”, “ghi”), and the correct use of punctuation signs (period and question mark).

By the end of the second grade, students from Romania are expected to use properly low-frequent spelling exceptions and writing rules, such as: the use of “m” before “p” and “b”, the proper use of “î” and “â”, and the proper use of words that contain the “x” (which sometimes are pronounced in one of two ways). At this time, students are also able to write correctly two commonly used irregularly written words (“înr-o” / “înr-un” and “dintr-o” / “dintr-un”), and the correct use of the rest of punctuation signs (exclamation mark, quotation dash, colon, and comma).

By the end of the third grade, students from Romania would learn how to properly use the majority of commonly used orthograms („s-a / sa”, „s-au / sau”, „i-a / ia”, „i-au / iau”, „l-a / la”, „ne-a / nea”, „ne-am / neam”) and the proper writing of the words “printr-o” and “printr-un”.

By the end of the 4th grade, they will be able to spell correctly the low frequency orthograms that would require higher cognitive processing, like “v-a / va”, “n-ai / nai”, “ce-l / cel”, “nu-l / n-o / nu-i”, “n-am / n-are / n-ați / n-au” etc.

Most of these standards didn’t change over the years; still, little information can be found in internationally indexed journals about how well students in Romania perform on spelling tasks, and whether spelling the words correctly represents a challenge for Romanian school age children. Therefore this study aims to address the following research question: When do Romanian children start to spell correctly?

METHOD

Participants

Four hundred and fifty seven elementary and middle school students ages 8 through 14 participated in this study. They all attended the same urban school in Romania. Thirteen of them were either diagnosed as having a specific learning disability in the area of reading/writing, or they were identified as having a functional disability (e.g. ADHD) and received special education services. The results of these students were disregarded in calculating the final scores, so that they would not interfere with the generalization of the results (see procedure below). The remaining 444 students attended 2nd grade ($n = 96$), 3rd grade ($n = 102$), 4th grade ($n = 82$), 6th grade ($n = 91$), and 8th grade ($n = 73$).

The school where the participating students were registered ranked average on previous year's national standardized tests, compared with schools from the same neighborhood, as well as compared with schools from the same city. All subjects were taught in Romanian (except of foreign language classes), and the declared ethnicity of registered students was 98% Romanian.

Procedure

The assessment of participating students' spelling performance was conducted using one 4th grade level dictated text for all grade levels. Reading out loud texts for students to write them correctly in the paper is a commonly used procedure in elementary school classrooms, and the majority of Romanian students are used with it since 1st grade. The assessment was conducted in group, by classes, each class containing 24-29 students.

The test administrator communicated students the purpose of the activity (to assess the spelling performance of the majority of students registered in the school), and asked them to do their best in spelling correctly the dictated text. In order for students to be motivated, they were told that a high performance at the test will result in extra credit for the language arts class. The test administrator also informed students that he will read the text while sitting on the back of the class, and under no circumstances students were not allowed to look at him when dictating the text. This measure was conducted to prevent the potential risk of lip-reading, which would put students who would look at the test administrator in an advantage over the others.

The text was read out loud at the average rate of 9 words per minute, in clusters of 3 to 5 words. Each cluster was read twice with a average break of 7 seconds between them. After the last words in each sentence were read, and after a 10 seconds break, the whole sentence was read one more time.

Five variables were considered when assessing students' writing performance: phonemes, orthograms, capitalization, punctuation, and diacritics.

Phonemes. Since Romanian has a rather transparent orthography, most phonemes have a grapheme correspondent, with few writing exceptions (e.g. no phoneme correspondent for the "h" when spelling "chi"). The text used in the study had 88 words, containing 420 phonemes in all. None of the words contained any writing exception; thus, each phoneme had one grapheme correspondent. Students' performance was assessed by counting the graphemes written correctly. One point was given for each grapheme written correctly. Points were taken off from each missed, switched, or added grapheme. Then, the results were transformed into percentages (see Table 1).

Orthograms. Romanian writing system has several orthograms. The term derives from the greek, then latin word "orthographia" (www.larousse.fr) and is defined as being a model of correct writing (www.dexonline.ro). Orthograms in Romanian writing system are identified by the dash sign that connects parts of the word. The text from this study contained 8 orthograms (e.g. "s-au"). The spelling performance of students was assessed by whether they identified correctly the presence of the orthogram in the text and they spelled it appropriately (using the dash sign). One point was give for each orthogram spelled correctly; then the results were transformed in percentages (see Table 1).

Capitalization. The Romanian spelling system requires that words should start with a capital letter when they begin a sentence, or when they are proper nouns. In this study there were 18 words that needed to start with a capital letter (among which 5 were proper nouns). Again, each word correctly capitalized received one point, and the results were transformed into percentages (see Table 1).

Punctuation. A total of 14 punctuation marks were considered in assessing the punctuation of the text in the present study. The punctuation marks were 10 periods, 1 exclamation mark, 1 colon, 1 question mark, and 1 hyphen (quotation mark). The commas were disregarded, since they mark a continuing prosodic boundary, which could have varied every time the test administrator would have read the text. Each correctly written punctuation mark received one point and the total was then converted into percentages (see Table 1).

Diacritics. The study used a total of 42 letters that contained diacritics as follows: seventeen "ă", nine "î", six "ș", five "ț", and five "â". One point was awarded for each letter that contained a diacritic sign spelled correctly. The total was then transformed into percentages (see Table 1).

RESULTS

Descriptive statistics of writing performance of participating students by grade are displayed in the Table 1.

Table 1. Writing performance by grade (percent correct)

Grade	Phonemes <i>M (SD)</i>	Orthograms <i>M (SD)</i>	Capitalization <i>M (SD)</i>	Punctuation <i>M (SD)</i>	Diacritics <i>M (SD)</i>
II	97.83 (1.53)	71.22 (23.16)	93.26 (9.96)	84.92 (16.15)	96.68 (5.32)
III	99.04 (.88)	94.61 (12.12)	97.12 (5.07)	92.62 (8.66)	98.67 (2.49)
IV	99.26 (.68)	98.02 (7.97)	96.99 (4.50)	92.18 (8.33)	98.98 (2.45)
VI	99.45 (.45)	97.94 (6.78)	94.85 (8.57)	90.11 (13.01)	99.22 (2.48)
VIII	99.48 (.46)	99.14 (3.80)	95.05 (7.75)	90.24 (13.92)	99.15 (2.32)

Post-hoc pairwise comparisons with Bonferroni corrections indicate that overall there is a significant difference ($p < .05$) in spelling performance of 2nd graders compared with the 3rd, 4th, 6th and 8th graders. However, no significant difference ($p > .05$) could be found between the spelling performance of 3rd graders' and students in the upper classes.

The writing performance of students on each grade level was also measured by each variable using independent-samples t- tests. Results indicated that 2nd graders' performance was significantly lower ($p < .001$) than the one of students from the upper classes for all 5 assessment criteria. The performance of 3rd graders compared with the performance of students from the upper classes not was statistically different ($p > .05$) for the areas of phonetics, capitalization, punctuation and diacritics, but the difference between their performance and the performance of 4th graders was statistically significant ($p = .023$) in the area of orthography. The performance of 4th graders was also not statistically significant ($p > .05$) compared with students in the upper classes, and neither the performance of 6th graders was not significantly different ($p > .05$) to the one of 8th graders in all 5 assessment areas (see Figure 1).

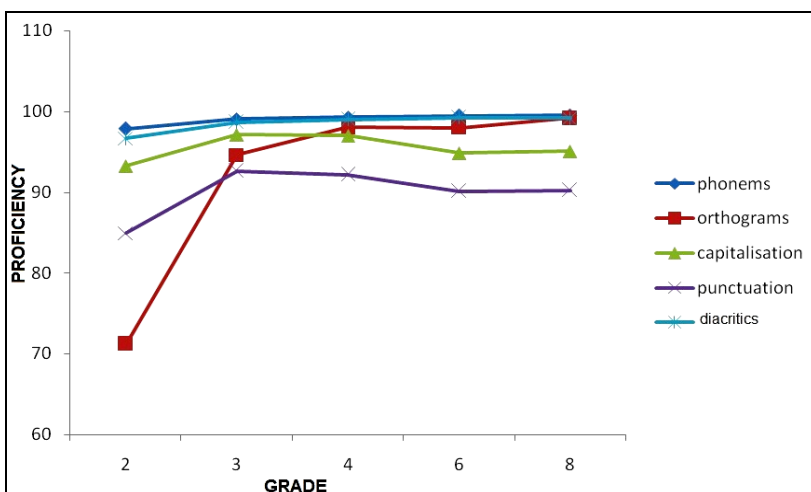


Figure 1. Writing performance of students by grade (percent correct)

DISCUSSION

This study aimed at assessing the types of writing difficulties encountered by a randomly selected sample of elementary and middle school students from Romania and to identify a possible milestone in the development of spelling abilities of children in Romania.

Results indicated that overall, there are no major spelling performance differences between Romanian students starting with 3rd grade. Except of the area of orthograms, the 3rd graders in our study performed at the same level with students in the upper classes, while the 4th graders performed at the same level with students in upper classes in all 5 areas of assessment. The findings are consistent with national curriculum standards requirements (see above).

The study also indicates that overall, the area with the lowest performance was the punctuation, while the area with the highest performance was the phonetics. The poor performance in the area of punctuation may be attributed to its perceived lack of importance (students may be too focused on doing well on spelling), or to prosodic variables (the students might not “read” correctly from the intonation of the test administrator that they are not familiar with). The overall high performance in the area of phonetics might be attributed to the fact that once all alphabet letters are being learned by the students, the correspondence phoneme-grapheme is being done automatically. Thus, unlike opaque orthographies, the automatic component of phonemes-graphemes correspondence in the transparent orthography writing system allows students to focus better on other aspects of spelling (like capitalization, or diacritics), helping them have an overall good spelling performance (between 90% and 99% accuracy after 3rd grade in all areas of writing, according to our data presented in Table 1).

Limitations

The generalizability of the results needs to be treated with caution. One limit of the study is that even though the participating students attended the same school, thus coming from a rather similar socioeconomic environment comparing the performance of students registered in different grades might not always provide the most accurate data. For instance, the writing expectations for students in the 8th grade might have been different (higher or lower) when they attended 2nd grade than the expectations of 2nd graders in our study. Even though this scenario is less plausible, a longitudinal study (results of the same students measured during 8th years) might have provided a more accurate measure.

Another limit of the current study is its representativeness for the Romanian population. Even though the results matched national curriculum standards, and the participating students were attending an urban average performing school, the sample of participating students was not selected to be

sociologically representative for the entire Romanian school age population. It is possible that the milestone we found in this study might be different for students attending schools in rural areas, private schools, or schools from a different geographical location.

Except of the results in the area of orthograms for 2nd graders, the very high performance of students (above 90% proficiency, see Table 1) indicates that a ceiling effect probably occurred, and the variance in performance might be attributed to factors that are not as much related to students' educational level (e.g. the knowledge of grammar rules of spelling), or language processing ability (e.g. phonemic awareness), but they are rather developmental in nature (e.g. the length of attention span). This might suggest that generally, after the 1st grade, Romanian speaking students might have the skills necessary to spell correctly most of the words in their native language (with the exception of orthograms).

We also need to mention that all words used in the text had a highly regular spelling and probably their performance might have been lower if the text had spelling exceptions, ambiguous or context-sensitive words. Still, those spelling exceptions are met quite seldom in Romanian writing, and we believed that they would not be significant for the aim of our study.

Finally, another limit of the study is the large standard deviation values of our data. Except the area of phonetics, all other 4 areas of writing performance had a wide spread, and implicitly, quite volatile series of data. This can be explained by the unbalanced number of items (e.g. 8 orthograms vs. 420 phonemes) within the same text. Probably a replication study with more items from the area of orthograms, capitalization, punctuation, and diacritics would provide more accurate results.

CONCLUSION

Despite its aforementioned limitations, our study indicates that overall, by the end of 2nd grade students in Romania are not only expected, but they are also likely to spell correctly regular words, and no significant difference in spelling ability can be found after that school age. The results of our study also suggest with a high degree of confidence that the phoneme-grapheme correspondence of regular words reaches ceiling within the 1st year of instruction (97% proficiency).

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REFERENCES

- Caravolas, M. (2004). Spelling development in alphabetic writing systems: A cross-linguistic perspective. *European Psychologist*, 9, 3-14.
- Landerl, K. and Wimmer, H. (2008). Development of word reading fluency and spelling in a consistent Orthography: An 8-year follow-up. *Journal of Educational Psychology*, 100, 1, 150-161.
- Loeffler, K.A. (2005). No more Friday spelling tests? An alternative spelling assessment for students with learning disabilities. *TEACHING Exceptional Children*, 37, 24-27.
- Mann, V. & Wimmer, H. (2002). Phoneme awareness and pathways into literacy: A comparison of German and American children. *Reading and Writing*, 17, 653-682.
- Notarnicola, A., Angelelli, P., Judica, A. and Zoccolotti, P. (2012). Development of spelling skills in a shallow orthography: the case of Italian Language. *Reading and Writing*, 25, 1171-94.
- Nyikos, J. (1988). A Linguistic Perspective of Functional Illiteracy. *The Fourteenth LACUS Forum 1987*, Lake Bluff, Illinois: Linguistic Association of Canada and the United States, p. 146-163.
- Reed, D.K. (2012). *Why teach spelling?* Portsmouth, NH: RMC Research Corporation, Center on Instruction.
- Seymour, P.H.K., Aro, M. & Erskine, J.M. (2003). Foundation literacy acquisition in European orthographies. *British Journal of Psychology*, 94, 143-174.
- Singer, B. & Bashir, A. (2004). Developmental variations in writing. In C.A. Stone, E.R. Silliman, B.J. Ehren & K. Apel (Eds.), *Handbook of language and literacy: Development and disorders*. New York: Guilford Press, p. 559-582.
- Tompkins, G.E. (1998). *Language arts: Content and teaching strategies* (4th ed.). Upper Saddle River, NJ: Merrill/Prentice Hall.