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READING COMPREHENSION BY ROMANY AND BULGARIAN STUDENTS FROM FIFTH TO EIGHTH GRADE

Romany and Bulgarian students from grades 5 to 8 participated in the study. The purpose was to examine to what degree they understand reading materials and how different factors (psycholinguistic, soociolinguistic, and demographic) determine their reading skills. The data were organized in several factorial designs in order to analyze the influence of the following independent factors: mother tongue, gender, school grade, and type of residential area on reading comprehension. One of the most important results, which requires further research, is the extremely high average score of students in grade 5 compared in all designs to the performance of other grades.

Introduction

Interest in second language acquisition, as well as in the mechanism of reading, has increased during recent years. There are several factors contributing to this phenomenon. The first is the socio-political interest of people who read in a language that is not their mother tongue. In Bulgaria, for instance, the official language of the country is not the mother tongue of all students in primary and secondary schools. Yet these students are given written instructions in the official language and some of them very often do not understand the instructions. The second factor can be termed pedagogical. Students lose their interest in the educational process if they do not fully understand meanings and cannot achieve a particular level of proficiency in reading. Reading comprehension is an important aspect of second language acquisition. Even nowadays, when children show more interest in radio and television than in reading, reading comprehension remains the most effective means of language improvement. The third factor stimulating interest in the mechanisms of reading is the cognitive aspect of second language acquisition. The study of two code systems is extremely interesting, especially the question whether the processes of first and second language acquisition are parallel. This issue attracts the attention of various researchers.

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To grasp the cognitive aspect of reading comprehension means to consider the reading process as a problem-solving task related to brain processes. Research connected with reading comprehension is usually focused on the mechanism of brain processes.

J.R. Hayes (1989) defines the problem as a gap. According to him, when there is a gap between the place where you are and the place where you want to be, and you do not know how to jump over the gap, you are faced with a problem. By presenting the problem as a gap Hayes implies that, in order for the problem to be solved, its nature should be understood. In the cognitive process the reader is concerned with conceptualizing the problem (that is, the material to be understood) and solving it (that is, the process of comprehension).

Most models demonstrating reading comprehension are cognitive. LaBerge and Samuels (1974) propose a model illustrating how printed information is acquired by the reader and transmitted to different parts of the brain. Their model is based on the written text and focuses mainly on text characteristics but does not pay any attention to „meaning".

Just and Carpenter (1980) suggest another model. According to their theory, comprehension is the most important characteristic of the reading process. It should be noted that their concept of text is more adequate than that of LaBerge and Samuels (1974), who define text as a set of words. Just and Carpenter argue that a text has concepts and cohesion. Our conception is closer to their model in that perceiving a text is regarded as a process of understanding meaning.

In an earlier set of experimental psycholinguistic studies on language development of Roma children, studying in bilingual conditions, our task was to determine to what extent they had acquired one of the most important aspects of the reading technique – text comprehension. Roma and Bulgarian students from grade 1 to grade 4 took part in the first series of experiments. The results showed that the level of comprehension significantly increased from second to fourth grade. The performance of students living in the capital was most successful, and next were students from smaller cities. Students from towns obtained the lowest reading comprehension score. Children whose mother tongue is Romany obtained lower results in reading comprehension tests than those whose mother tongue is Bulgarian (Gerganov, 1997). These results point to the conclusion that students whose mother tongue is Romany should have more reading comprehension classes and should be offered special exercises developing their reading skills. Methodological seminars with teachers of Roma children were held aiming to provide better training for such teachers. Theoretical problems in reading comprehension related to text parameters were tackled as well as methodological strategies improving reading skills and text comprehension. It is envisaged that specialized preparation of teachers and their motivation to spend more time on reading comprehension exercises will contribute to an improvement of Roma students' reading skills.

In further experimental research the purpose was to define the degree to which Romany students from secondary schools understand reading materials and to determine the influence of some psycholinguistic, sociolinguistic and demographic factors on their reading skills. The research measuring reading comprehension skills of Roma students from grade 5 to grade 8 included a new series of experiments.

The reading comprehension test

We undertook to include 10 texts in a cloze test evaluating reading comprehension skills of students from grade 5 to 8. These were selected from 20 texts prepared in ad-

vance. According to experts, they were appropriate for students at that school age. In compliance with the devised scheme particular words were deleted from the texts and replaced with blank spaces. In the preparation of the cloze test the following procedures are usually applied:

– deleting every fifth, seventh or ninth word;
– deleting a number of arbitrary words;
– deleting different parts of speech, etc.

We used different deletion procedures, so that we could construct several subtests evaluating the influence of various text parameters on reading comprehension:

– subtest of *nouns*, measuring the role of nouns in reading comprehension;
– subtest of *adjectives*;
– subtest of *verbs*;
– subtest of *connectors*, defining the role of sentence connectors in reading comprehension *(who, what, where, when, without, because, etc.)*
– subtest of *pronouns*, measuring the influence of pronouns on reading comprehension (deleted pronouns – *she, he, it, they, her, his, its, their, etc*.).

The main purpose of the test was to measure students' reading comprehension of a text in different experimental groups. We present here only the results on the whole test of reading comprehension (grades 5, 6, 7 and 8).

Subjects

774 students from grade 5 to grade 8 with different mother tongues (Bulgarian and Romany) from various schools and residential areas took part in the research. After the test had been conducted, the initial data were examined. Some students submitted their tests with several filled-in blanks while others had omitted whole texts. Some students completed less than half of the blanks in different texts. Although these tests were collected by the teachers and given to research teams, they could not be included in the data analysis. Besides, a group of 80 students answering questions about their name, school grade and mother tongue gave Turkish as their mother tongue. We decided to include their tests in the sample because they were Muslim Romany and communicated in Turkish in their everyday life. Thus the factor of mother tongue was determined as follows: Bulgarian, Romany and Turkish. In all, we included the tests of 686 students in further analysis. These students formed our representative sample. The number of male and female students was approximately equal. The number of students in grades 5, 6, 7 and 8 varied slightly. The sample can be considered as well-balanced as to the factors of gender and grade.

Conducting the research

Bulgarian language teachers in the respective schools and grades administered the test. The teachers were instructed to distribute test booklets to the students and tell them to read carefully the 10 texts and fill in each blank with a suitable word. The teacher had to monitor students as to whether they followed the instructions given at the beginning of the test and if they answered the questions about their name, school, grade, town (or village), age and mother tongue.

The tested students understood the task correctly and had no problems. As already noted, the tests of students who gave up or completed a small number of blanks were considered invalid and were not included in the analysis.

Analyses, results and discussion

The test booklets of 686 students were given to experts for assessment. For each blank filled the student was assigned one point for the correct response or zero point for an incorrect word or for lack of any answer. Two criteria are usually used in the assessment of correct response in a cloze test:

– **strict criterion** – points are awarded only if the reader has indicated the original word.

– **comprehension criterion** – points are assigned if the student has chosen the original word or if she/he has replaced it with a synonym on condition that the meaning of the text is preserved.

We decided to apply to our research the second criterion. The maximum score of the 10 texts was 209 points and the minimum was zero. So the scale for measuring reading comprehension ranged from 0 to 209 points.

Data were processed by the computer program MICROCAT. This program enabled us to calculate the raw score and make a psychometric analysis of test items (the 209 missing words in this case). The analysis of psychometric test parameters will not be discussed at length. We will only note that the results of the analysis were satisfactory. The degree of test reliability was very high. Most of the test items had acceptable values on parameter difficulty and discriminability.

The dependent variable in our research was the scale values in the reading comprehension test obtained by each student.

In order to achieve our aims, we had to establish whether the independent variables influence significantly reading comprehension. We also had to draw some conclusions about the Bulgarian language education from grade 5 to 8 and language acquisition of students whose mother tongue is not Bulgarian. To perform these tasks, we organized the experimental data in factorial designs and applied ANOVA to test hypotheses concerning the influence of the independent factors on the reading comprehension test scores.

The structure of our sample was planned so that the influence of the independent factors (mother tongue, school grade, gender and type of residential area) on reading comprehension test scores could be evaluated. Unfortunately, it was impossible to include the factors of type of residential area and mother tongue into a complete factorial design. Therefore we organized the data in several factorial designs as follows.

Analysis: Organizing the experimental data in a three-way factorial design in order to analyze the influence of independent factors *mother tongue*, *gender* and *school grade* on reading comprehension

In this design the factor *mother tongue* is determined as follows – Bulgarian, Romany and Turkish, the factor *school grade* is fixed at four levels – grades 5, 6, 7 and 8, and the factor *gender* as male and female. 3-way ANOVA indicated that factors *mother tongue* (F=14.8; p<0.0001) and *school grade* (F=7.5; p<0.0001) have significant influence on reading comprehension, whereas the impact of factor *gender* (F=2; p<0.1) is nonsignificant.

Figure 1. Influence of mother tongue on reading comprehension

The influence of the factor *mother tongue* on the total score of the reading comprehension test is presented in Figure 1. Students whose mother tongue was Bulgarian obtained the highest average score (143.8), while students whose mother tongue was Turkish had the lowest average score (124.5). The average test score of Roma students (143.3) was practically equal to that of the Bulgarian students. Application of the Duncan test measuring the significance of the difference between two average levels shows that the difference between the average scores of Bulgarian and Turkish students (p<0.0001) and between the average scores of Roma and Turkish students (p<0.0001) is significant. The

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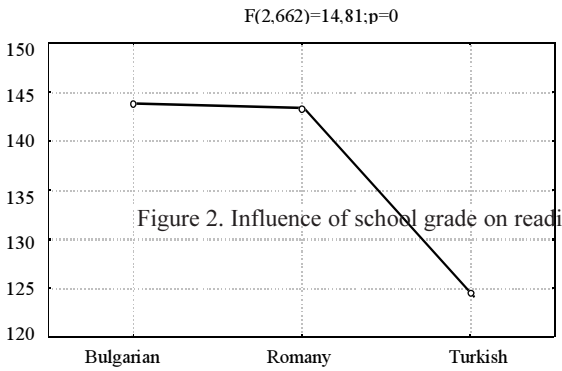
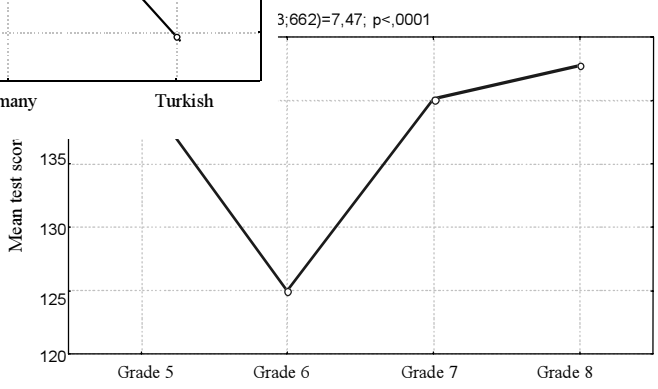


Figure 2. Influence of school grade on reading comprehension



The influence of the factor *school grade* is exemplified in Figure 2. If we exclude the students in grade 5, whose mean score is extremely high, we can observe a steady increase in the average scores of students in grades 6, 7 and 8. This improvement can be

ascribed to intensification of Bulgarian language teaching as well as teaching of other subjects in higher school grades, which in turn leads to development of students' reading comprehension skills. There is a significant difference between the average scores of grades 6-7 and 6-8 (p<0.0001 in both cases). The difference between the mean scores of grades 7-8 is not significant (p=0.05). The mean of grade 5 (140.8) is equal to the mean of grade 7 (140.1) and grade 8 (142.8). The average score of grade 5 is significantly higher than the mean of grade 6 (125.0) (p<0.0001).

The higher average score of students in grade 5 can be attributed to an improvement in the educational process as a result of the above-mentioned seminars providing training for teachers. Besides, last year most of these students were given a similar reading comprehension test. It is possible that teachers have paid more attention to reading comprehension in the process of teaching Bulgarian language. Only additional research can show whether students in grade 5 in our sample are better prepared in Bulgarian and have more improved reading skills.

Figure 3. Influence of gender on reading comprehension

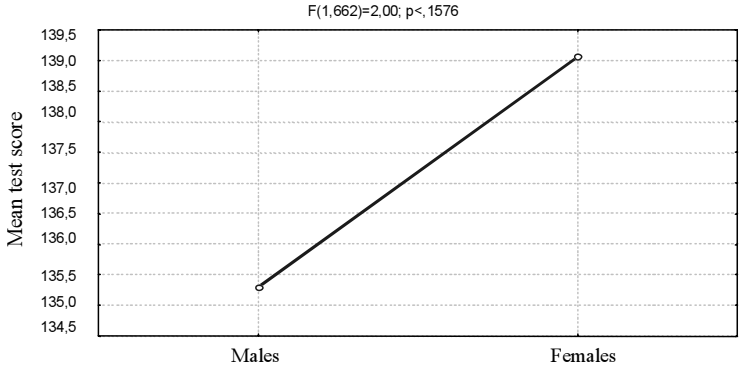


Figure 3 demonstrates the influence of the factor of *gender* on reading comprehension. Females obtain somewhat higher average scores (139.1) than males (135.4), but the difference is nonsignificant (F=2; p=0.1).

The only statistically significant interaction in this factorial design is the interaction between *mother tongue* and *school grade* (F=12.27; p<0.0001). The parameters of this interaction are illustrated in Figure 4, where axis *X* represents the factor *mother tongue*, and axis *Y* the average test scores, and the profiles correspond to the four grades.

The figure shows that there is a decrease in the average test scores of grades 6 and 8 in the following order: Bulgarian (with highest scores), Roma and Turkish students (with lower scores). There is no difference in the mean of students' reading scores with different mother tongues who study in grade 7 (the profile of grade 7 is parallel to the axis X). The profile of grade 5 indicates that Roma and Turkish students in that grade obtain higher scores than Bulgarians but only the higher mean of Roma students (154.1) is statistically significant (p<0.0001) compared to that of Bulgarian students (130.7). The results contradict our expectation that Roma students in grade 5 would obtain lower scores in comparison to Roma and Bulgarian students in grades 6, 7 and 8.

Figure 4. Influence of the interaction between mother tongue and school grade on reading comprehension

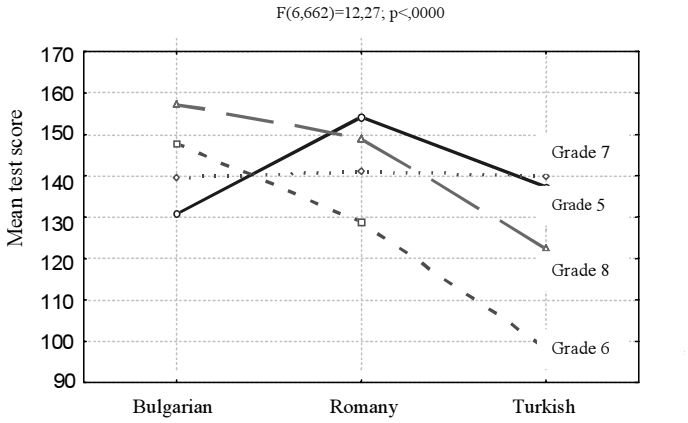


Figure 4 illustrates that only students in grade 8 have higher average scores than Roma students in grade 5. In all other cases, Roma students in grade 5 show better performance of reading comprehension skills. This can be explained with the above-mentioned increased interest of Roma students in grade 5 in reading comprehension resulting from the administration of a similar test in grade 4 for the purpose of a previous research. Students in all other grades have never been given a reading comprehension test, nor participated in such a research.

Analysis: Organizing experimental data in a three-factor model in order to analyze the influence of independent factors *school grade, mother tongue and type of residential area* on reading comprehension

As already explained, the structure of the sample was violated and we could not include all available data in the factorial design that comprises the factor *type of residential area*. This factor could be taken into consideration only if some levels of factors *mother tongue* and *type of residential area* are excluded, namely, Turkish language as an element of factor *mother tongue,* and towns and villages as levels of the factor *type of residential area*. The influence of the independent factors *school grade, mother tongue and type of residential area* as well as the impact of their interactions on reading comprehension was analyzed with respect to the above set limitations. The results attained through ANOVA indicate that the factor *school grade* exerts statistically significant influence on the average score of the reading comprehension test (F=11.1; p<0.0001). The nature of this influence is exemplified in Figure 5. Students in grade 5 obtain higher average scores than students in grade 6. However, the difference is not statistically significant. The significant difference is that between the following school grades: 5-8 (p<0.0001); 6-7 (p<0.005); 6-8 (p<0.0001) and 7-8 (p<0.0001). As expected, the average scores increase in higher grades. The only exception is the average score of grade 5.

The analysis of results in this design should be considered carefully because, as already pointed out, the factor *type of residential area* can be examined only at two levels – capital and city, since not all types of residential areas in the sample are presented by

Figure 5. Influence of school grade on reading comprehension

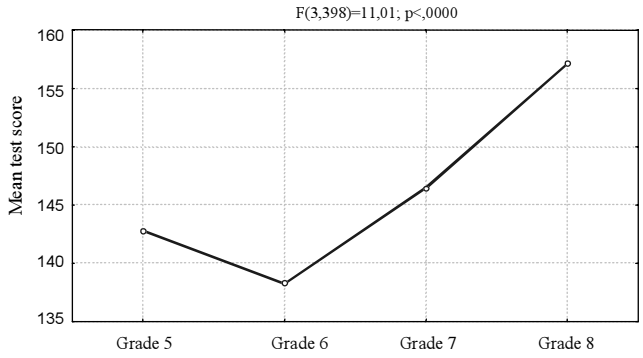


Figure 6. Influence of type of residential area on reading comprehension

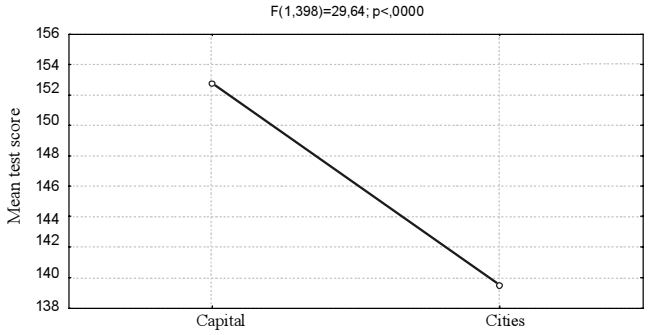
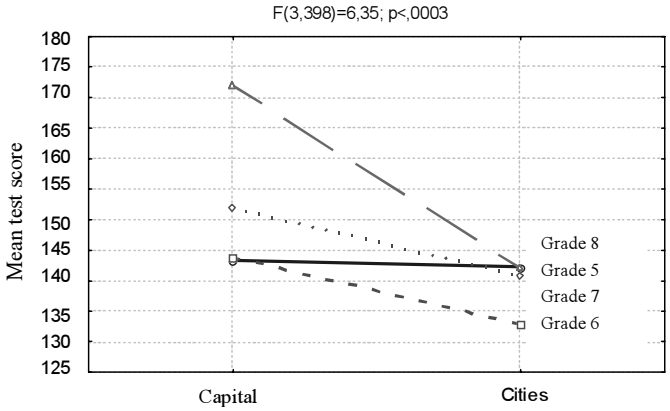


Figure 7. Influence of school grade and residential area on reading comprehension



Bulgarian, Roma and Turkish students. In other words, there are students with Bulgarian and Romany languages as mother tongues who represent only the capital and cities. Therefore, only data satisfying these two criteria are included in the design.

The influence of factor *type of residential area*, only at its two levels – capital and city, and only with inclusion of Bulgarian and Romany students, is statistically significant (F=29.6; p<0.0001). Figure 6 illustrates the nature of this influence. Students living in the capital have a significantly higher average score (152.8) than students from other cities (139.5) (p<0.0001).

The only interaction that exercises a statistically significant influence is the interaction between factors *school grade* and *type of residential area* (F=6.35; p<0.0005). This influence is presented by the profiles in Figure 7. As can be seen, the profiles of grades 6, 7 and 8 show deterioration in reading comprehension skills of students living in cities. The profile of grade 5, however, is parallel to the axis X. This means that there is no difference between students in grade 5 living in the capital and cities with respect to their comprehension skills. Another interaction is demonstrated by the profiles of grades 7 and 8, which are extremely distant in the section representing the capital and coincide in the section representing the cities. The only possible explanation of this interaction and its influence is the lower motivation for achievement of students in grade 8 living in towns and cities. The Duncan test shows that there is a statistically significant difference between the average scores of students in grades 8 and 7 living in the capital and the mean scores of students in all other grades and from all other types of residential areas. Moreover, the average score of students in grade 8 living in the capital is the highest one and is followed by the mean of students from grade 7 in the capital. The mean of students in grade 6 living in towns and cities is significantly the lowest of all average scores. There is no significant difference between the average scores of students in grades 5, 7 and 8 living in towns and cities and between the mean scores of students in grades 5 and 6 from the capital.

The established influence of the basic factors and the impact of their interactions in the respective designs should be considered more carefully. Stricter control on the parameters of such factor models should be exercised in further research in order to determine the influence of factors of the type residential area and school grade on the indexes reflecting the efficiency of Bulgarian language teaching of students with different mother tongues.

Conclusion

The main objective of reading a text is understanding its meaning. The above presented psycholinguistic research illustrates how factors *school grade, mother tongue* and *type of residential area* influence global understanding of a text. One of the most important results which requires further research is the extremely high average score of students in grade 5 compared in all designs to the performance of students in other grades. One possible explanation is the intensive preparation for reading comprehension in a previous fourth grade provided by Bulgarian language teachers who received special training in various psycholinguistic aspects of the reading mechanisms and the process of grasping the meaning of a text. Another probable interpretation is the higher motivation and sensitivity to reading comprehension tests demonstrated by students in grade 5 who

have already acquired experience in such exercises from research conducted in previous years, whereas students in other grades had never taken part in similar experimental research.

The fact that students in grade 5 whose mother tongue is Romany have more successful performance on the reading comprehension test than their fellow students speaking Bulgarian as mother tongue is not clarified yet.

Further research on the problems of reading comprehension in different school grades should focus on the conceptual and semantic aspects of a text and their influence on understanding in light of the latest achievements of psycholinguistics and cognitive science.

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