

**THE AWARENESS OF METACOGNITIVE READING STRATEGIES AND  
COMPREHENSION PERFORMANCE IN PRIMARY SCHOOL CHILDREN. A  
CORRELATIONAL STUDY**

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**Abstract.** The comprehension of written texts has a major relevance, both at an academic level and in daily life, as considerable efforts are made in order to identify the variables that contribute to the increase of this competence among students. This research paper aims to examine the extent to which the comprehension of reading is related to the use of certain metacognitive strategies among students of the primary school. The lot of the subjects is formed by 85 students who are in the 4<sup>th</sup> grade who have completed a self-reported measure known as the Metacomprehension Strategy Index (Schmitt, 1990) and participated in the national evaluation testing of reading comprehension. The results indicated a generally low metacomprehension, previewing being the only metacognitive strategy used more often by the subjects. There was noticed the existence of several considerable positive connections between the comprehension performance and the use of metacognitive strategies, particularly in the case of drawing from background knowledge. Educational implications are discussed.

**Key words:** metacognitive reading strategies, comprehension performance, primary school

## **I. INTRODUCTION**

From a psycho-pedagogical perspective, reading may be divided in two big components: decoding and comprehension/understanding. Decoding refers to the deciphering of graphic symbols, while comprehension implies the construction of the meaning of information. The reading act is not complete if one of the parts is underdeveloped. A good reading fluency, without understanding the meaning of the words, sentences, phrases or the text, is equivalent to a failed decoding.

Nonetheless, conducted by the guiding assumption according to which a good verbal comprehension is enough to understand the written message, the focus of the primary school curricula has been, until not long ago, particularly on the practice of decoding and oral

comprehension, “the attention on the comprehension of written texts being minimal” (Williams, 2018, p.1923). At national level, the change of paradigm has been done based on the students’ disappointing results on the international exams, such as PIRLS (Progress in International Reading Literacy Study) or PISA (Programme for International Student Assessment), studies which conceptualize reading as the comprehension of the written message. Therefore, a number of measures regarding both the academic curricula and educational politics have started being taken. For instance, in the methodological suggestions of The school curriculum for Romanian language and literature for the 3rd and 4th grade (2014) it is specified that the structuring of the receiving competence of written message shall be reported to the reference framework PIRLS, after whose coordinates the comprehension of the written text in the *National Evaluation of Romanian language* is also assessed. Furthermore, the decrease of educational illiteracy has become a goal of the presidential programme “Educated Romania” from 2018, aspect which urges the declaration of the necessary measures to increase the comprehension competence of written messages.

The reading comprehension is a transactional activity which presupposes the interaction between the reader and the read text. During this interaction, a series of variables intersect one another, and the pieces of information are filtered, so that the output or the final “product” may differ from reader to reader. Among the variables that influence the comprehension of the text there can be mentioned the following ones: previous knowledge of the field, knowledge about the structure of the text, cognitive abilities or metacognitive abilities (Cain, 2012). The latter refer to the fact that advanced readers have mastered, through multiple experiences, certain strategies that they automatically utilize before, during and after the reading. These strategies help them to monitor their understanding of the text and adopt fixing strategies when the information lacks any sense (Shanahan et al., 2010). For instance, before reading, advanced readers establish the purpose of the reading (to get informed, to study, or for pleasure), revise the text and assess its relevance for achieving the purpose, issue predictions about the content of the text based on the title and pictures, formulate questions to which they wish to find the answers, activate previous knowledge about the text or assess the structure of the text. While reading, they check whether the text makes sense by rendering it through their own words; they render the main points so as to check their understanding; they check if they can answer the questions they’ve asked themselves before reading; they assess the accuracy of their predictions and come up with new ones; they determine the meaning of some unfamiliar words from the context; they organize the material according to the identified structured; they utilize graphic planners, they take notes, summarize, highlight the main ideas; they issue inferences in order to connect the new information to the old one. After reading, they check to see whether they accomplished the goal for which they read; they render the main ideas and create a

mental representation of the material or issue opinions about the purpose of the author (Cazacu, 2012).

These “supervisory” skills of the cognitive activity may be found under the dome of metacognition, a concept which became popular in 1970. Flavell (1979) is the one who contributed the most to the popularization of the concept, its definition involving two parts: the knowledge of cognitive phenomena and their monitoring. The first one refers to what the subject knows about their own cognition (metacognitive knowledge), and the second refers to the manner in which they use their knowledge to adjust their cognition (metacognitive control). In the process of the monitoring of the reading, it is essential that the student possesses knowledge about reading strategies (declarative knowledge), to know how to use these strategies (procedural knowledge- the steps) and to know when to use these strategies (conditional knowledge).

The research of metacognition is a difficult process due to the complexity of objectification and externalization of the internal processes involved in the reading act, particularly in the children of small school age. In contrast to the metacognitive knowledge that can be assessed through *off-line* measurements, retrospectively, the metacognitive control is caught *on-line* while the subject interacts with the text (Veenman, 2015). Although the studies have emphasized that the control is a stronger performance predictor in comprehension tests than knowledge, it is really difficult to be assessed on big samples of subjects, particularly if the aim of the study is a correlational one, as this one is.

The awareness of strategies is a developmental process which is developed through practice and personal experience, or in some cases never. This is the reason why metacognitive processes are hard to be captured in young students. Moreover, some authors doubt the usefulness of the highlight of this component. For instance, in the case of reading, Perfetti et al. (2005, after Tannet, 2014) claim that the development of metacognition in the learning phase of decoding, it is not recommended being even detrimental. The argument is that of the limited capacity of cognitive processing. In the decoding phase, says Perfetti, there have to be assigned enough cognitive resources for the processing of letters, so that the decoding becomes automatic. If we focus on the metacognitive abilities as well, the cognitive processes function in this sense too, assigning less time to the decoding. This is why, in the first years, children are exposed to texts of a low grade of semantic difficulty, so that the ability of decoding the message can be practiced and acquired. However, the empirical data does not fully support this perspective. The results of the interventions based on the growth of metacognitive abilities have emphasized both an increase of a metacognitive awareness of used strategies, as well as a growth in the reading performance in the case of young students (Smith, 2016; Lencioni, 2013).

In the context of these findings, the research of metacognitive processes in the education of young students becomes quite relevant. Particularly as in our country there is a little number of studies which examine the metacognitive knowledge of reading strategies specific to primary school students or which emphasize the connection between metacognition and the reading comprehension specific to this educational phase.

## II. RESEARCH QUESTIONS:

- What is the level of metacomprehension strategies awareness in the 4th grade?
- What types of metacognitive strategies do the students prefer in the primary classes?
- Is there a difference between girls and boys related to these variables?
- Is there a positive relation between metacomprehension strategies awareness and comprehension performance in 4th grade students?

## III. METHODOLOGY

The number of students included in this study is that of 85, all in the 4th grade and attending two schools in Arad county, Romania. 45 of them are boys, and 40 are girls. The students study in normal schools and do not have any learning disorders or other disabilities.

The awareness of metacognitive strategies was measured with the Metacomprehension Strategy Index (MSI) (Schmitt, 1990), and the reading comprehension through a National Evaluation of the Romanian language competences.

*Metacomprehension Strategy Index* (MSI) (Schmitt, 1990) is a scale consisting in 25 multiple-choice questions about the awareness of the use of several metacognitive strategies for the comprehension of narrative texts. Each sentence has 4 possible answers (A,B,C,D) with only one correct answer and three distractors. The student reads every sentence and circles what would help them the most to understand the text. The items are divided into three sections, according to the phases of the reading process: before reading strategies- items 1-10, during reading strategies- items 10-20 and after reading strategies-items 20-25. Example of items:

Before I begin reading, it's a good idea to

- A. Look at the pictures to see what the story is about.
- B. Decide how long it will take me to read the story.
- C. Sound out the words I don't know.

D. Check to see if the story is making sense.

While I am reading, it's a good idea to

- A. Stop to retell the main points to see if I am understanding what has happened so far
- B. Read the story quickly so that I can find out what happened
- C. Read only the beginning and the end of the story to find out what it is about
- D. Skip the parts that are too difficult for me

After I've read a story it's a good idea to

- A. Think about how I would have acted if I were the main character in the story
- B. Practice reading the story silently for practice of good reading
- C. Look over the story title and pictures to see what will happen
- D. Make a list of the things I understood the most

The information included in the index assess the awareness of the following metacognitive reading strategies: a) predicting and verifying (7 items); b) previewing (2 items);c) purpose setting (3 items); d) self-questioning (3 items);e) drawing from background knowledge (6 items);f) summarizing and applying fix-up strategies (4 items).

The *National evaluation test for Romanian language* for 4th grade is a standardized test which assesses the cognitive field - *Written text understanding*. The test consisted in the reading of a narrative text of about 770 words, followed by 12 questions that verify the comprehension and are aimed at four content domains:

- Retrieving explicitly stated information- 4 items
- Operating with the main ideas of the text-2 items
- Making straightforward inferences- 4 items
- Interpreting and integrating ideas and information- 2 items

The total score can be between 0 and 24 points, the higher the score the higher the reading performance.

Metacomprehension Strategy Index (Schmitt, 1990) was managed collectively during the course hours, in the presence of the teacher. The experimenter has read a model item from each section and made sure that the subjects understand the way to complete the scale. The aim of the examination was explained to them, and they were offered additional information if requested, although these situations were extremely rare. The quiz was given two weeks away from the National evaluation test for Romanian language hwo from 2019.

#### **IV. RESULTS**

*The awareness of the use of metacognitive strategies*

*Table 1.* Descriptive analysis for the Metacomprehension strategies index (MSI) and Comprehension performance

	<b>Min</b>	<b>Max/ (MSI max)</b>	<b>Mean</b>	<b>SD</b>	<b>Level</b>
<b>Metacomprehension strategies index (MSI)</b>	1.00	21.00 (25)	8.12	4.18	Low
<b>MSI- Before reading</b>	1.00	9.00 (10)	3.47	1.87	Low
<b>MSI-During reading</b>	.00	7.00 (10)	2.75	1.81	Low
<b>MSI-After reading</b>	.00	5.00 (5)	1.9	1.34	Low
MSI-predicting and verifying	.00	6.00 (7)	1.78	1.59	Low
MSI-previewing	.00	2.00 (2)	1.24	.60	High
MSI-purpose setting	.00	3.00 (3)	.78	.89	Low
MSI-self questioning	.00	3.00 (3)	.88	.90	Low
MSI-drawing from background knowledge	.00	6.00 (6)	2.14	1.37	Low
MSI-summarising and applying fix-up strategies	.00	4.00(4)	1.28	1.03	Low
<b>Comprehension performance (National state Romanian language evaluation)</b>	14.00	24.00	22	2.19	High

The descriptive analysis indicates a high performance in the reading comprehension (M=22), but a low general level of awareness of the metacognitive strategies (M=8.12 out of 25). In comparison to the reading phases, the highest score of MSI is after reading, M=1.9 out of 5. It is followed, in sequence, by the use of metacomprehension strategies before reading (M=3.47) and during reading (M=2.75 out of 10).

In regard to the preference for the types of metacognitive strategies, the highest score was obtained by MSI-previewing (M=1.24 out of 2). On the second and third places, even if with low scores, there are MSI-drawing from background knowledge (M=2.14/6) and MSI-summarizing and applying fix-up strategies (M=1.28/4). They are followed by MSI-self questioning (M=.88/3), MSI-purpose setting (M=.78/3) and MSI-predicting and verifying (M=1.78/7) in a decreasing order.

*The awareness of the use of metacognitive strategies and the genre*

The T test for independent samples (Independent sample T test) did not indicate significant differences between the averages obtained by boys and those by girls on not one of the variables included in this study.

*The awareness of the use of metacognitive strategies and the reading performance*

The relation between *the awareness of the use of metacognitive strategies and the reading performance* was tested with the Pearson correlation analysis (Table 2 and 3).

*Table 2. Correlations between before-during-after reading metacomprehension strategies and comprehension performance*

	<b>MSI</b>	<b>Before</b>	<b>During</b>	<b>After</b>
<b>Reading comprehension</b>	.368**	.240*	.321**	.379**
<b>Metacomprehension strategies index (MSI) Total score</b>		.875**	.836**	.771**
<b>MSI- Before reading</b>			.573**	.562**
<b>MSI-During reading</b>				.460**

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

The results have indicated a positive significant relationship between reading comprehension and metacomprehension strategies ( $r = .368^{**}$ ). All three MSI under-scales are positively related to the comprehension, the strongest correlation being with MSI-after reading ( $r = .379^{**}$ ), then with MSI-during reading ( $r = .321^{**}$ ) and with an effect size smaller MSI-before reading ( $r = .240^{*}$ ).

*Table 3. Correlations between before-during-after reading metacomprehension strategies and comprehension performance*

<b>Metacomprehension strategies index (MSI)</b>	<b>Comprehension performance</b>
MSI-predicting and verifying	.203
MSI-previewing	.022
MSI-purpose setting	.294*
MSI-self questioning	.247*
MSI-drawing from background knowledge	.371**
MSI-summarising and applying fix-up strategies	.267*

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

The correlation analysis indicated that the strongest significant positive relationship is between Comprehension performance and MSI-Drawing from background knowledge ( $r = .371^{**}$ ) (Table 3). Comprehension performance is also positively associated with MSI-Purpose setting ( $r = .294^*$ ), MSI-Summarising and applying fix-up strategies ( $r = .267^*$ ) and MSI-Self questioning ( $r = .247^*$ ).

## V. CONCLUSIONS

This research paper aimed to explore the extent to which 4<sup>th</sup> grade students are aware of the metacognitive strategies they use and the conditions in which they do it when reading a text, as well as the relation between the metacognitive awareness and the reading comprehension.

The descriptive and correlational analysis emphasized that younger students generally lack the awareness of the use of metacognitive strategies, whereas those who use them more often obtain higher performances at the National Evaluation for the Romanian language.

In regards to the level of awareness of metacognitive strategies in the three phases of reading, the students involved in this study apply metacognitive strategies particularly after reading, and less during the reading. Compared to the types of metacognitive strategies, the only metacognitive strategy used at a high level is Pre-viewing, with the rest of the five being taken aware of to a small extent by the subjects of this sample.

The answer to the research question if there *is a relation between metacomprehension strategies awareness and reading understanding in 4 grade students* is a positive one. The more often the 4<sup>th</sup> grade students become aware and claim they apply metacognitive strategies, the higher becomes the comprehension level of the texts. The strategic approaches used after and during the reading are particularly associated with a higher comprehension, the size of the effect for the phase before reading being the lowest one (according to Cohen, 1988, a Pearson correlation coefficient equals a .3 which indicates a medium size of effect).

As compared to the types of the used metacognitive strategies, it appears that Drawing from background knowledge is associated the most with the comprehension of the texts. The only metacognitive strategies that are not associated with performance of the comprehension are Predicting, verifying and previewing.



Although the research questions have received satisfactory answers, we would have expected results with a higher significance power, particularly in regards to the connection between the metacognitive awareness and the reading comprehension. A series of possible explanations may be issued. First of all, on this sample the reading performance is generally high, which denotes a decreased differentiation between students in this dimension. It would have been preferred the application of several additional reading tests created by the experimenter in order to better detect the students' levels of reading expertise, and possibly some stronger correlations between the concerned variables.

Second of all, MSI is a self-reported measure of awareness and the use of metacognitive strategies. We cannot be sure of the extent to which the students apply them, or even if they apply them at all. It is possible that due to their age they might not be aware of them, metacognitions being cognitive processes of superior order and difficult to operate with. Therefore, additional evaluation methods of metacognitive strategies may be required, such as interviews or observations during the reading process, so as to increase the accuracy of the obtained results.

Finally, the size and selection of the sample restricts the generalization of results to people with other characteristics, a larger number of subjects originating from diverse populations being indicated.

At an educational level, the study draws the attention towards the necessity of training metacognitive abilities in primary school students, or even earlier, in preschool. As Cobb (2016) has shown, knowledge and awareness of metacognitive strategies are present from a young age. The awareness of Drawing from background knowledge should particularly be investigated by teachers (Campbell, 2008), as it appears to be poorly developed in 4<sup>th</sup> grade students.

Evidence have shown that the strategic approach of learning is directly related to school success in high school or university students (Roman & Bran, 2015; Egerău, 2019). Nevertheless, metacognition should not remain an appanage of the older or advanced students. As demonstrated by a series of studies, the metacognitive strategies may be learned even from preschool and considerably contribute to the increase of reading performance (Shanahan, et al., 2010). "An effective pedagogy must be metacognitive" (Bocoş, 2013, p.58), to value self-reflection, self-control and self-direction in learning.

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