Revista UNIMAR

Julio-diciembre 2025 | Vol. 43 No. 2 pp. 27-43 | Rev. Unimar | ISSN: 0120-4327 | DOI: https://doi.org/10.31948/rev.unimar | Revista Unimar | e-ISSN: 2216-0116

Association of academic reading skills and the meta-comprehension process in rural students

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To reference this article / Cómo citar este artículo / Para citar este artigo: Rodríguez-Gómez, H. F. (2025). Association of academic reading skills and the meta-comprehension process in rural students. *Revista UNIMAR, 43*(2), 27-43. https://doi.org/10.31948/ru.v43i2.4661

Reception date: February 5, 2025

Review date: March 6, 2025

Approval date: May 17, 2025

Abstract

This research aimed to determine the relationship between academic reading skills (accuracy, comprehension, and speed) and meta-comprehension processes (planning, monitoring, and evaluation) among students at a rural educational institution in Caldas, Colombia. This issue arose from the fact that rural students consistently performed worse on reading tests than their peers in urban areas and private institutions. The theoretical framework focused on the notions of reading, comprehension, and metacognition. It was supported by the Infantile Neuropsychological Assessment Battery and the Reading Awareness Scale to establish a comparative analysis. The quantitative, non-experimental, descriptive-correlational, and cross-sectional research study showed that few variables of the reading and meta-comprehension processes present a direct correlation. Consequently, an explicit association between reading skills and meta-comprehension could not be established. Despite some students presenting difficulties with certain skills or processes, the evaluations obtained from the child neuropsychological evaluation battery and the reading awareness scale suggest that they can be considered conscious readers of their comprehension process.

Keywords: comprehension; reading; meta- comprehension; academic skills

Result of the research entitled: *Asociación entre las habilidades académicas de lectura y metacomprensión en una muestra de niños de educación básica secundaria de un contexto rural*, developed from August 2020 to August 2022, in Caldas, Colombia, as part of the Master's Degree in Education at the Universidad de Caldas.

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Revista UNIMAR
Revista Unimar | Rev. Unimar | Vol. 43 No. 2 pp. 27-43 | Julio-diciembre 2025
e-ISSN: 2216-0116 | ISSN: 0120-4327 | DOI: https://doi.org/10.31948/rev.unimar

Asociación de las habilidades académicas de lectura y el proceso de metacomprensión en estudiantes rurales

Resumen

El objetivo de esta investigación fue determinar la asociación entre las habilidades académicas de lectura (precisión, comprensión y velocidad) y el proceso de metacomprensión (planeación, monitoreo y evaluación) en estudiantes de una institución educativa rural del departamento de Caldas, Colombia. Este propósito surgió a partir de los bajos resultados obtenidos sistemáticamente por los estudiantes rurales en pruebas de lectura, en comparación con sus pares de zonas urbanas y de instituciones privadas. El marco teórico se centró en las nociones de lectura, comprensión y metacognición, y se apoyó en la batería de evaluación neuropsicológica infantil (ENI) y en la escala de conciencia lectora (ESCOLA), con el fin de establecer un análisis comparativo. La investigación, de enfoque cuantitativo, diseño no experimental, alcance descriptivo-correlacional y corte transversal, evidenció que existen pocas variables del proceso lector y de metacomprensión que presentan una correlación directa. En consecuencia, no fue posible establecer una asociación explícita entre las habilidades de lectura y la metacomprensión. Se concluye que, a pesar de que algunos estudiantes presentan dificultades en ciertas habilidades o procesos, pueden ser considerados lectores conscientes de su proceso comprensivo, según las valoraciones obtenidas a partir de la batería de evaluación neuropsicológica infantil y la escala de conciencia lectora.

Palabras clave: comprensión; lectura; metacomprensión; habilidades académicas

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Associação entre habilidades de leitura acadêmica e o processo de meta-compreensão em estudantes rurais

Resumo

O objetivo desta pesquisa foi determinar a relação entre as habilidades de leitura acadêmica (precisão, compreensão e velocidade) e os processos de meta-compreensão (planejamento, monitoramento e avaliação) entre os alunos de uma instituição educacional rural em Caldas, Colômbia. Esse objetivo surgiu do desempenho consistentemente baixo dos alunos rurais em testes de leitura em comparação com seus colegas de áreas urbanas e instituições privadas. A estrutura teórica concentrou-se nas noções de leitura, compreensão e meta-cognição. Ele foi apoiado pela Bateria de Avaliação Neuropsicológica Infantil e pela Escala de Consciência de Leitura para estabelecer uma análise comparativa. O estudo de pesquisa quantitativo, não experimental, descritivo-correlacional e transversal mostrou que poucas variáveis dos processos de leitura e meta-compreensão apresentam uma correlação direta. Consequentemente, não foi

Revista Unimar | e-ISSN: 2216-0116 | Rev. Unimar | ISSN: 0120-4327 | Vol. 43 No. 2 pp. 27-43 | Julio-diciembre 2025 | DOI: https://doi.org/10.31948/rev.unimar

possível estabelecer uma associação explícita entre as habilidades de leitura e a meta-compreensão. Apesar de alguns alunos apresentarem dificuldades com determinadas habilidades ou processos, as avaliações obtidas com a bateria de avaliação neuropsicológica infantil e a escala de percepção de leitura sugerem que eles podem ser considerados leitores conscientes de seu processo de compreensão.

Palavras-chave: compreensão; leitura; meta-compreensão; habilidades acadêmicas

Introduction

According to Bautista-Macia and González (2019), the social divide in Colombia widens when processes essential to collective well-being lack a clear social purpose. In this context, literacy education in Colombia's numerous rural schools (spanning more than 30,000 locations) assumes particular importance, given its fundamental role as outlined in Article 22 of the 1994 General Education Law. However, rural students' consistently lower academic results compared to their urban and private school peers (Instituto Colombiano para la Evaluación de la Educación [Icfes], 2018) suggest that this process is not fulfilling its potential to mitigate inequalities. In light of this, this research exercise aims to examine the conceptualization and practice of academic reading skills and metacognition in a rural Colombian context to determine their relationship.

Reading is the fundamental principle of the human learning process, and metacognition is one of the essential components considered crucial to reading comprehension and critical thinking. Reading is a broad concept that encompasses discussions about linguistic and academic skills, as well as the cognitive processes involved in student learning. From a neuropsychological perspective, according to Roselli et al. (2004), reading is an academic skill that develops in school. Reading is a vast field in which methods of acquisition and study, such as measurement and evaluation, are discussed. Matute et al. (2013) emphasize that reading and cognition facilitate the development of additional academic abilities. Matute (2011) agrees with Cassany et al. (1994) that the reading process is a product of schooling.

García-García et al. (2018), for their part, argue that reading «requires procedures, sequences of actions, and processes that must be intentionally directed and harmonized with cognitive skills, abilities, and actions to construct meaning and comprehend» (p. 159). Reading processes that lack a specific purpose do not contribute to the construction of meaning; rather, they have a direct negative impact on students' academic performance. Based on this premise, one possible cause of school failure in Colombia could be difficulties with the reading process, given that reading inherently involves comprehension (García-García et al., 2018).

Roselli et al. (2004) identified accuracy, comprehension, and speed as fundamental reading skills that children progressively develop during their schooling. These skills have traditionally been assessed using direct measures and analyzed through age-adjusted percentiles in instruments such as the Infantile Neuropsychological Assessment (INA). These skills develop from global word recognition in kindergarten to attention to linguistic morphology in later stages. The development of reading is considered a comprehensive process involving a child's physical, psychological, and social growth (Matute et al., 2013).

According to the 2018–2021 Saber Test Report and the 2018 PISA Results Report (ICFES, 2020a), Colombia's average reading performance does not meet international standards. These reports have generated discussion and reflection on student education in Colombia because they provide an assessment of students' academic status based on a combination of quantitative and qualitative data. A constant percentage of students score at the insufficient and minimum levels, accounting for 40% and 50%

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of the evaluated population (ICFES, 2018). Similarly, the National Report on Results for Colombia PISA 2018 (ICFES, 2020b) reveals that Colombia's average score is 412 points. This falls short of the average scores of OECD and non-OECD countries, which are 487 and 496 points, respectively.

The difficulty in developing academic reading skills may be greater in rural classrooms, as noted by Arias (2017), due to systemic deficiencies in this context. Research on the subject highlights the concerns of teachers and other groups, ultimately leading to the development of strategies to improve the situation. Ochoa and Aragón (2005) state that teaching metacognitive strategies in a natural classroom setting can promote metacognitive development and improve the reading process, particularly in rural areas.

On the other hand, metacognition in reading comprehension is referred to as metacomprehension, which is defined as the reader's knowledge of their comprehension. It is an instant awareness of how reading is perceived and how it is utilized for learning. Flavell (1987) distinguishes two processes of metacognition to differentiate between what a person knows and what they can do with that knowledge. Flavell (1993) states: «We could say that cognitive strategies are used to make cognitive progress and that metacognitive strategies are used to monitor that progress. Monitoring one's progress on a task is an important metacognitive activity» (p. 160).

According to Soto et al. (2019), a key characteristic of meta-understanding is its positive impact on student performance. Unlike Solé (1997) and Díaz-Barriga and Hernández (2002), who consider prior knowledge a pillar of reading comprehension, Soto et al. (2019) argue that reading strategies can help readers with limited prior knowledge use logic and common sense to fill in conceptual gaps. Metacognitive knowledge relates to the transfer of learning, meaning that the knowledge acquired can be applied in contexts other than where it was originally learned. This concept is gaining popularity in active pedagogy as the final stage of the teaching and learning process.

Due to its significance in the theory of metacognition and reading comprehension in educational settings, research with a timeframe greater than seven years was necessary to understand the background of the subject of study. Although these issues have been relevant since the early 20th century, recent research, motivated by concerns about academic performance in elementary and secondary education, has focused on metacognitive strategies for improving reading comprehension, which address health, cognitive, and social aspects to identify practical solutions.

Bolaños and Gómez (2015), Santiago et al. (2009), and Blasco and Allueva (2010) point out the difficulty of reading comprehension among school-aged children and attribute it to the underdevelopment of metacognitive strategies at this stage. These authors agree that an absence of solid academic reading skills can lead to academic failure, emphasizing the need to integrate metacognitive development into the curriculum as a fundamental component of student training.

According to a study by Rodríguez et al. (2016), an absence of metacognitive strategies developed during schooling leads to persistent reading difficulties and increases the disparity between students of different performance levels. The authors suggest that these metacomprehension strategies can be based on Vygotsky's theory of the zone of proximal development, which they consider fundamental to developing the reading process.

On the other hand, Berrocal and Ramírez (2019) and Edossa et al. (2019) disagree on the significance of age in developing metacomprehension, although brain maturation influences skills, including reading performance. These authors agree with Rodríguez et al. (2016) that the lack of intervention with metacognitive strategies exacerbates inequality in reading self-regulation.

Soto et al. (2019) found that accuracy and planning (variables in the reading awareness scale) improve the inference process, supporting the hypothesis that greater awareness of the reading process is linked to higher comprehension.

Revista Unimar | e-ISSN: 2216-0116 | Rev. Unimar | ISSN: 0120-4327 | Vol. 43 No. 2 pp. 27-43 | DOI: https://doi.org/10.31948/rev.unimar | Julio-diciembre 2025

Multivariate analysis of variance (MANOVA) reveals that students with strong inferential skills report greater metacognitive knowledge.

Research on metacognition and reading comprehension has neglected their impact and formative development in rural contexts, as evidenced by the lack of national and regional studies on metacomprehension as a key element for improving academic performance in these areas. Therefore, the importance of this research lies in its contribution to the analysis and discussion of metacomprehension in rural area students. While reading performance has been a concern in local academia, studies focus on test results and non-rural populations, revealing a local epistemological and research gap regarding the association between reading skills and metacomprehension in rural areas.

The purpose of this study is to determine the association between academic reading skills and metacomprehension performance in a sample of students from a rural area in the department of Caldas, Colombia. To this end, the following question was posed: What is the association between academic reading skills and metacomprehension performance in a sample of secondary school students from a public institution in a rural area? Including the metacomprehension process in this context serves as a mitigation strategy, allowing the problem to be addressed from another perspective (cognitive sciences) in the face of the multiplicity of didactic contributions arising from similar research. In this way, concise information is obtained, as reading studies reveal that metacognition is a related process, but it is not widely developed in rural areas.

Methodology

The research used a quantitative method with a descriptive and correlational scope; the design was non-experimental and cross-sectional (Hernández & Mendoza, 2018). The correlational scope between academic reading skills and metacomprehension was based on descriptive principles, as it was necessary to specify characteristics and collect information on a phenomenon through the variables employed, including the Infantile Neuropsychological Assessment (INA) and the Reading Awareness Scale (Escola).

Sample

Students in sixth, seventh, eighth, and ninth grades, in 2021, from a public educational institution in the rural area of the municipality of Supía, Caldas, Colombia (see Table 1).

Table 1

Sample breakdown by gender and grade

Gender	Grade 6	Grade 7	Grade 8	Grade 9	Total
Female	4	7	1	3	15
Male	10	0	6	1	17
Total	14	7	7	4	32

Note. The discrimination began in May, coinciding with the enrollment of the participating educational institution.

The sample was non-probabilistic, consisting of 32 students who met the inclusion criteria: being within a maximum age of 15 years and 11 months and enrolled in 6th, 7th, 8th, or 9th grade.

Julio-diciembre 2025 Vol. 43 No. 2 pp. 27-43 DOI: https://doi.org/10.31948/rev.unimar
Revista Unimar Rev. Unimar ISSN: 0120-4327 e-ISSN: 2216-0116

Instruments

The Infantile Neuropsychological Assessment Battery was used, along with measures of accuracy, comprehension, and speed. Scale 56 of the Reading Awareness Scale Battery was also used.

Reading awareness scale (Escola)

Puente et al. (2009) propose that, to establish the level of awareness of one's reading process, one must assess the reader's perception and cognitive abilities. The reading awareness scale allows for evaluating an individual as a reader, which helps in developing intervention strategies to address difficulties encountered. The age range for the application of the Escola is between 8 and 13 years, but this is not established as an insurmountable limit to delve into the reading consciousness of the person who reads. When applying the Escola, the profile of the person being assessed is drawn up according to the established scale; in this way, the interval in which the student is placed is determined, according to the process and the variable, to establish whether the reading awareness is very deficient (range 0–25), deficient (range 25-50), adequate (range 50-75) or outstanding (range 75-100).

Infantile Neuropsychological Assessment (INA)

The INA is a battery that measures the different skills children and young people develop during their school years. According to Matute et al. (2013), the age range for its administration is between 5 years and 16 years, to achieve a broader analytical scope throughout the student's school life. In this case, the domain selected was 'Reading', and the designed tests were applied. These tests are ultimately scored and ranked using percentiles that identify poor, average, or advanced performance in specific areas. It should be noted that the 26th percentile is the indicator of low performance. Therefore, those who obtain this score or fall below require educational support to address the cognitive or academic deficiency identified in the test results. Table 2 details the variables for the two batteries.

Table 2

Discrimination of variables in the INA and Escola batteries

Topic	Variable	Variable Type
Sociodemographic	Age (years completed)	Quantitative ratio
	Grade	Qualitative ordinal
	Sex	Qualitative nominal
Escola	Person planning	Quantitative ratio
	Task Planning	Quantitative ratio
	Text Planning	Quantitative ratio
	Planning score	Quantitative ratio
	Person Supervision	Quantitative ratio
	Task Supervision	Quantitative ratio
	Text Supervision	Quantitative ratio
	Supervision Score	Quantitative ratio
	Person Evaluation	Quantitative ratio

Julio-diciembre 2025 | Vol. 43 No. 2 pp. 27-43 | DOI: https://doi.org/10.31948/rev.unimar | Rev. Unimar | ISSN: 0120-4327 | Revista Unimar | e-ISSN: 2216-0116

Topic	Variable	Variable Type
Escola	Task Evaluation	Quantitative ratio
	Text Evaluation	Quantitative ratio
	Evaluation Score	Quantitative ratio
	Overall Score	Quantitative ratio
INA	Reading syllables precision: ReadSyllablesP	Quantitative ratio
	Reading words precision: ReadWordsPre	Quantitative ratio
	Reading non-words accuracy: ReadNOWordsPrec	Quantitative ratio
	Reading sentence precision: ReadSentPre	Quantitative ratio
	Number of words with errors when reading aloud: NWWEWRA	Quantitative ratio
	Reading comprehension sentences: ReadCompSent	Quantitative ratio
	Reading comprehension aloud: ReadCA	Quantitative ratio
	Comprehension RCA, question 4: CRCAQ4	Quantitative ratio
	Silent reading comprehension of a text: SRCofaT	Quantitative ratio
	Reading-aloud speed: RAS	Quantitative ratio
	Silent reading speed: SRS	Quantitative ratio

INA variables are designed to evaluate the cognitive and academic abilities that children demonstrate at a specific age within a given testing or learning domain. According to Matute et al. (2013), reading involves accuracy, or the child's ability to correctly complete the assigned task. Correct and incorrect answers are quantitatively assessed, except for the sentence reading task. Comprehension refers to the ability to understand and retain the information contained in a text. Speed refers to how long it takes the child to read a given text. This is calculated by dividing the number of words read per minute by the total time taken to read the text (Rodríguez, 2023).

The reading awareness process includes sub-processes that enable readers to become aware of their learning. According to Puente et al. (2009), planning is defined as the process of searching for information. In this process, the reader's attitude and the strategies they deem appropriate for achieving the objective of the task are assessed. By nature, supervision involves monitoring the subject's attention and effort while performing the task, utilizing strategies chosen during the planning stage, and managing the reader's self-efficacy and perseverance when encountering difficulties in understanding a text. Finally, evaluation measures reading performance and confirms the appropriateness of the strategies (Rodríguez, 2023).

Revista Unimar | Rev. Unimar | Vol. 43 No. 2 pp. 27-43 | Julio-diciembre 2025
e-ISSN: 2216-0116 | ISSN: 0120-4327 | DOI: https://doi.org/10.31948/rev.unimar

Regarding the established variables, Puente et al. (2009) state that they are fundamental for the development of metacognition. The task involves identifying information that could impact the subject's learning process. Therefore, how well the subject performs depends on their level of awareness. The person, as a variable, allows for the distinction of mental processes; in this, age, prior knowledge, relevance, interest, motivation, or skill on the subject are crucial. On the other hand, the text variable refers to the characteristics that contribute to comprehension and memory. These characteristics include vocabulary, syntax, authorial intent, and formal structure (Rodríguez, 2023).

This study was carried out in four phases. First, experts in the areas of the conceptual categories (INA-Escola) created and validated the material. In the second phase, permission was requested from the educational institution. Then, the project and rationale for the research process were presented to the education community, and permission was requested from the guardians of potential participants. In the third phase, student enrollment was verified based on the inclusion and exclusion criteria. The fourth phase involved statistical analysis of the data and preparation of the final report.

In this way, the total enrollment of secondary school students at the educational institution was verified, as well as the number of potential students for the sample. Additionally, as of May 2022, the Integrated Enrollment System (SIMAT) was consulted, the instrument calibration process was carried out, and the method for administering the INA and Escola assessment batteries was established, bearing in mind space and time constraints.

Data on academic reading skills and metacognitive processes were collected using the INA and Escola assessment batteries. The recommendations for administering both instruments were followed to ensure clarity of the results, as stated by Matute et al. (2013). They recommend applying the INA in a calm environment that limits distractions and allows for time management according to the tasks in the test. Similarly, Puente et al. (2009) suggest choosing a space that offers freedom and time.

Results

When categorizing students according to Puente et al. (2009), the greatest deficiencies identified in children were found in text planning, person-text supervision, and task and text evaluation. Likewise, the overall supervision rating presented less difficulty (see Table 3). It was also observed that, in the overall score, all children were placed as 'Adequate' or 'Outstanding', because one child who was placed as 'Poor' or 'Very poor' in Text Planning, was not placed as 'Very poor' in Task Planning.

Table 3

School statistics broken down by direct scores and profiles

Process	Mean		Standard Deviation		Coefficient of Variation (%)	
	Direct scoring	Profile	Direct scoring	Profile	Direct scoring	Profile
Person Planning	7.8	64.6%	1,9	15.8%	24.5%	24.5%
Task Planning	14.8	61.8%	2,9	12.1%	19.5%	19.5%
Text Planning	9.9	62.1%	3,1	19.4%	31.3%	31.3%
Planning Score	32.6	62.6%	5,6	10.8%	17.1%	17.3%

Revista Unimar | e-ISSN: 2216-0116 | Rev. Unimar | ISSN: 0120-4327 | Vol. 43 No. 2 pp. 27-43 | DOI: https://doi.org/10.31948/rev.unimar | Julio-diciembre 2025

Process	Mean		Standard Deviation		Coefficient of Variation (%)	
	Direct scoring	Profile	Direct scoring	Profile	Direct scoring	Profile
Person Supervision	4.8	59.8%	1,4	17.0%	28.5%	28.5%
Task Supervision	8.9	74.0%	2,0	17.0%	23.0%	23.0%
Text Supervision	7.8	64.8%	1,7	14.5%	22.3%	22.3%
Supervision Score	21.4	67.0%	3.2	10.0%	14.9%	14.9%
Person Evaluation	7.8	65.4%	1.8	15.1%	23.2%	23.2%
Task Evaluation	4.6	57.4%	1.5	18.5%	32.2%	32.2%
Text Evaluation	4.7	59.0%	1.5	18.6%	31.5%	31.5%
Evaluation Score	17.2	61.3%	2.7	9.6%	15.7%	15.7%
Overall Score	71.1	63.5%	7.7	6.8%	10.8%	10.8%

Note. The score corresponds to the Shapiro-Wilk test (Razali & Wah, 2011).

According to Table 4, the mean percentiles for academic reading skills (ENI) showed that children reached the 50th percentile for reading comprehension aloud. However, for reading speed aloud and silently, the percentiles were the lowest. It should be noted that student scores were varied, with most coefficients of variation exceeding 70%.

Table 4

ENI statistics (direct scores and percentiles)

Variable	Reading			Percentile		
	Mean	Std. Dev.	CV (%)	Mean	Std. Dev.	CV (%)
Reading syllables precision: ReadSyllablesP	7.7	0.7	8.9%	42.5	20.6	48.6%
Reading words precision: ReadWordsPre	10.5	1.6	15.4%	46.5	10.1	21.8%
Reading non-words accuracy: ReadNOWordsPrec	6.9	0.9	12.7%	30.9	24.3	78.5%
Reading sentence precision: ReadSentPre	8.1	1.3	16.0%	29.4	25.4	86.3%
Number of words with errors when reading aloud: NWWEWRA	2.7	2.0	71.9%	27.2	26.5	97.5%

Julio-diciembre 2025 Vol. 43 No. 2 pp. 27-43 DOI: https://doi.org/10.31948/rev.unimar
Revista Unimar Rev. Unimar ISSN: 0120-4327
e-ISSN: 2216-0116

Variable	Reading			Percentile		
	Mean	Std. Dev.	CV (%)	Mean	Std. Dev.	CV (%)
Reading comprehension sentences: ReadCompSent	7.6	1.4	18.1%	28.5	27.1	95.0%
Reading comprehension aloud: ReadCA	5.8	1.9	33.1%	58.1	31.9	54.9%
Comprehension RCA, question 4: CRCAQ4	1.5	0.8	54.6%	-	-	-
Silent reading comprehension of a text: SRCofaT	3.9	2.2	56.1%	41.4	35.4	85.5%
Reading-aloud speed: RAS	101.1	29.5	29.2%	23.0	24.1	104.8%
Silent reading speed: SRS	119.3	47.1	39.5%	26.6	27.6	103.9%

Note. The score corresponds to the Shapiro-Wilk test (Razali & Wah, 2011).

Spearman's correlation coefficient was used to determine if there was a dependency between the variables when establishing a correlational relationship. According to Table 5, the following correlations were found:

- *Reading words accuracy*, *reading non-words accuracy*, *number of words with errors*, *reading aloud*, *reading comprehension sentences*, *reading comprehension aloud*, *RCA question 4 comprehension*, *silent reading comprehension of a text*, and *reading speed aloud* do not correlate with the planning, supervision, or evaluation of Escola.
- Children who tend to score high on *reading syllable accuracy* tend to do so also on text assessment.
- *Sentence reading accuracy* directly correlates with text planning, text monitoring, and overall planning score.
- *Silent reading comprehension of a text* correlates negatively with task planning and positively with task evaluation.
- *Reading-aloud speed* is positively correlated with person planning, text planning, overall planning score, and overall score

Revista UNIMAR | e-ISSN: 2216-0116 | Rev. Unimar | Vol. 43 No. 2 pp. 27-43 | ISSN: 0120-4327 | DOI: https://doi.org/10.31948/rev.unimar | Julio-diciembre 2025

Table 5

Spearman correlation between INA – Escola (P-values)

Variable	Sentence Reading accuracy	Reading word accuracy	Reading non-word accuracy	Reading sentence accuracy	Number of words with errors when reading aloud	Reading comprehension sentences	Reading comprehension aloud	Comprehension RCA. question 4	Silent reading comprehension of a text	Reading-aloud speed	Silent reading speed
Person planning	0.750	0.491	0.978	0.870	0.611	0.713	0.797	0.201	0.479	**0.010**	0.716
Task planning	0.578	0.507	0.560	0.213	0.069	0.612	0.133	0.418	**0.003**	0.120	0.590
Text planning	0.193	0.171	0.118	**0.002**	0.750	0.492	0.372	0.368	0.271	**0.002**	0.481
Person supervision	0.587	0.973	0.795	0.344	0.276	0.782	0.568	0.784	0.151	0.278	0.066
Task supervision	0.828	0.518	0.214	0.715	0.388	0.271	0.811	1.000	0.058	0.420	0.092
Text supervision	0.860	0.806	0.944	**0.031**	0.876	0.728	0.434	0.391	0.948	0.650	0.260
Person evaluation	0.771	0.315	0.293	0.229	0.478	0.243	0.310	0.678	0.342	0.723	0.252
Task evaluation	0.263	0.424	0.933	0.827	0.486	0.253	0.385	0.930	**0.019**	0.624	0.587
Text evaluation	**0.041**	0.644	0.906	0.599	0.940	0.064	0.897	0.250	0.914	0.148	0.164
Overall planning score	0.503	0.102	0.187	**0.021**	0.385	0.586	0.812	0.584	0.081	**0.001**	0.331
Overall supervision score	0.543	0.938	0.712	0.666	0.967	0.461	0.930	0.971	0.128	0.170	0.211
Overall evaluation score	0.325	0.856	0.708	0.977	0.450	0.149	0.190	0.312	0.095	0.362	0.718
Overall score	0.523	0.349	0.357	0.091	0.871	0.688	0.542	0.931	0.943	**0.002**	0.360

Note. The existing correlations between variables are described using the Pearson correlation coefficient for normally distributed data and the Spearman coefficient for non-normal data.

Discussion

This study revealed that no research has been conducted at the regional level —the Colombian coffee area— examining the direct relationship between metacognition and reading skills. Similarly, a correlation was found between some of the variables measured by the two evaluation batteries,

Julio-diciembre 2025 Vol. 43 No. 2 pp. 27-43 DOI: https://doi.org/10.31948/rev.unimar
Revista Unimar Rev. Unimar ISSN: 0120-4327
e-ISSN: 2216-0116

which can be cited as a precedent. However, the results indicate that there is generally no association between reading performance and metacomprehension. Blasco and Allueva (2010) determined that the association between reading comprehension and metacognition is significant, though not direct or correlated.

On the other hand, the results only allowed for pointing out an association between some variables:

- Reading syllables precision - evaluation text
- Reading sentences precision - planning text
- Text supervision-global planning score
- Silent reading comprehension of a text - task planning and task evaluation
- Reading-aloud speed - person planning
- Text planning-overall score planning-overall score.

In this context, students who are aware of their reading process do not necessarily develop reading comprehension skills. According to Soto et al. (2019), metacomprehension development occurs frequently because the reader immediately realizes their possible error during the monitoring process that is intrinsic to reading.

Intervened students are outlined as adequate and outstanding conscious readers (Puente et al., 2009). The previous concepts align with those of an efficient reader, as described by Solé (1997). This can be used to perform a deeper analysis and reflection for another research work, because the intervals proposed by the Escola do not determine when one categorization ends and another begins. It should be noted that although the Escola is the most widely used Spanish language test to measure reading comprehension, it is a very open measure because the results overlap. Considering that the first interval is 0 to 25 and the second is 25 to 50, it is unclear whether the estimated results at 25 belong to the 'Very poor' or 'Poor' categories. A similar case is presented with scores of 50 and 75. Consequently, this can be unclear when profiling students' reading awareness.

On the other hand, it is acknowledged that students who receive intervention have difficulty with text planning. According to Soto et al. (2019), planning can be a significant predictor of positive reading comprehension. Similarly, supervision of the student and text, as well as the evaluation of the task and text, reveal 'Poor' and 'Very poor' profiles. It is unclear whether the reader has questioned his progress or if he is using the appropriate strategies to achieve the objectives outlined in the planning phase. He is not even considering the characteristics of the text itself to detect the causes of not understanding it (variable) (Jiménez, 2004).

Therefore, a conscious reader should exceed the 'very poor' and 'poor' intervals in all variables. Following this premise, better performance in the other variables allows for placement in intervals 50-75 and 75-100. However, the gap that remains in this area cannot be ignored. It is necessary to analyze the appropriate scores, since they reveal deficient profiles. It can be concluded that some students in the sample excel in certain areas but not in others. Additionally, it would be incorrect to analyze this phenomenon in light of age or school grade because the range of the battery INA discriminates against profiles based on age. In the Escola, it is concluded that the sample is aware of its reading process.

According to the scale of the instrument, it is relevant to assume the 26th percentile as the measure used to determine the significance and attention of a situation that should be reinforced in the evaluated students. This allows us to identify which aspects should be monitored. Regarding pressure and speed tests, it is notable that the results are not significantly higher than this percentile.

As for speed skill, the difficulty is evident. This subtest is affected, which aligns with the study by De los Reyes et al. (2008), who linked the speed variable to impairment fluency. This can lead to problems recognizing separate words, reading aloud, and understanding complete phrases. Rosselli et al. (2006), on the other hand, suggest

Revista Unimar | e-ISSN: 2216-0116 | Rev. Unimar | ISSN: 0120-4327 | Vol. 43 No. 2 pp. 27-43 | DOI: https://doi.org/10.31948/rev.unimar | Julio-diciembre 2025

that the effect of speed on Spanish reading in the studied samples is due to language and age. The age range of the sample was 11 to 15 years. Specifically, as people grow older, this process improves; however, the impairment still exists, according to the scale.

Therefore, high scores in reading words and text evaluation are the result of similar cognitive processes that students must perform. Silent reading comprehension correlates negatively with task planning and positively with task evaluation. According to Jiménez et al. (2009), this is because valuation procedures are not uniform for all cognitive activities within the monitoring process.

There is no relationship between being a good reader and being aware of the reading process. This is due to the nature and function of the evaluation battery. From a structural perspective, academic reading skills and reading comprehension awareness tasks are not related because they evaluate different processes. Rather, the relationship is based on the authenticity of the reading and the intention behind it. This investigation began with the hypothesis that to be a good reader, one must understand what reading is and what it implies. For this reason, the relationship between reading and being aware of the reading process is intrinsic. Quantitatively submitting it to a research process is a way of validating academic processes.

Conclusions

The results of an investigation lead to several reflections when synthesized. First, there is no direct association between academic reading skills and metacomprehension. There is no complete association; it only exists partially in the case of some variables. Second, INA processes are immersive, so students develop them naturally. This research does not prove that students who are aware of their reading process understand texts better. It can only suggest that they are more accurate or read faster. However, this possibility can be inferred from the mostly positive results of applying the measures of both tests. According to Solé (1997), Puente et al (2009), and Matute et al. (2013), the students are competent, adequate, outstanding, and metacognitive readers.

When assessing reading performance based on INA reading tasks, it was possible to demonstrate shortcomings in rural public education student training. Secondary school students in rural areas manage to succeed in each task, retain the information in a text, and understand it. Although the average scores cause the variable to be approved above the 26th percentile in almost all tasks, a model of the national educational evaluation is reflected in which students demonstrate some of their most developed skills. That is, if they demonstrate greater precision or understanding than speed, the result will be a percentile above 26. This does not seek to stigmatize the national evaluation model, but rather to raise awareness of it. Therefore, the performance in terms of precision and understanding is positive regarding the INA. However, speed performance requires further analysis because their tasks are classified in the 26th and 23rd percentiles.

Similarly, this investigation revealed that improving the speed skill could enhance performance, as one of the tasks scored in the 23rd percentile. Students do not read the required number of words in a given time. The causes are unknown, but it is assumed that context, or the type of school, influences this result, as Rosselli et al. (2006) suggest. When determining the average of the three skills, the first two act as a loop when calculating the speed. Thus, the results are positive. Matute et al. (2013) clarify that it is necessary to assess them separately to avoid skewing the results.

Similarly, it has been shown that metacomprehension performance at the planning level is highly satisfactory. More than 80% of those evaluated were classified as adequate or outstanding metareaders. The same pattern is used in supervision and evaluation processes, allowing us to conclude that the 32 participating students performed well in reading awareness. Good performance is understood as a quantifiable result.

Revista Unimar | Rev. Unimar | Vol. 43 No. 2 pp. 27-43 | Julio-diciembre 2025
e-ISSN: 2216-0116 | ISSN: 0120-4327 | DOI: https://doi.org/10.31948/rev.unimar

It's important to reflect on the values that enable students to understand their reading process, given that the school aggregates scores based on certain variables. In other words, when a student's profile is submitted, it is done so globally. In this sense, all the secondary school students who participated in the intervention are readers with outstanding and adequate reading awareness.

The students who were assessed exhibited similar characteristics in their reading processes. They followed directions, patterns, rules, and models. Their sense of freedom (Freire, 2002) is unclear. They do not yet possess the tools that would lead them to genuine reading. Their approach to developing reading awareness enables them to take ownership of their learning process and become aware of their reading process. Reading appears to be developing in an undirected manner. According to the results, analysis, and evaluation, only one student in the intervention group scored below 60 points overall in the Escola classification system. High-performing students demonstrate their reading awareness through improved task planning, monitoring, and personal assessment.

Finally, it is worth noting that the INA and Escola provide pedagogical tools that facilitate discussion and intervention when reading levels below the 26th percentile or awareness levels below 50 are identified. These tools determine a child's reading level and indicate when further consideration is needed.

Including metacognition from early grades could be a pedagogical strategy that helps avoid disparities in some outcomes across various assessed tasks. Tesouro (2005) argues that incorporating metacognition into the curriculum will encourage students to think for themselves, instead of merely accumulating knowledge. Examining the relationship between metacomprehension and academic reading comprehension skills alongside the results of the educational institution's internal and external tests raises a new question, as these results are unfavorable. Reading is a natural and personal process, and awareness of one's reading process is also natural. As the subject of a quantitative study, it partially validated the correlation between the two processes.

Conflict of interest

This document does not present any conflicts of interest related to personal, financial, political, intellectual, racist, or religious matters that could compromise its reliability.

Ethical Responsibilities

The Master's Program in Education committee at the Universidad de Caldas approved the *Research application protocol*, which outlines the informed consent process for the educational community, including the education institution, parents, and students. The protocol also explains the purpose of the research, the procedure, the data to be collected, and the right to withdraw from the study at any time. It was also clarified that the information would be used only for the study.

Sources of funding

The author declares that he has no financial support for this work.

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Revista UNIMAR | Revista Unimar | e-ISSN: 2216-0116 | Rev. Unimar | ISSN: 0120-4327 | Vol. 43 No. 2 pp. 27-43 | DOI: https://doi.org/10.31948/rev.unimar | Julio-diciembre 2025

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Contribution

Hansel Rodríguez Gómez: Principal Investigator. Statistical data processing, writing of materials and methods, and obtaining results.

The author prepared, read, and approved the manuscript.