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Special Issue on Emerging Trends in the Field of Empirical Research in Education Tendenze emergenti nel campo della ricerca empirica in educazione

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Author Guidelines

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# Validation of «Tell Me How You Read» Reading Strategies Questionnaire for Upper-Secondary School Students\*

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#### VALIDAZIONE DEL QUESTIONARIO SULLE STRATEGIE DI LETTURA «DIMMI COME LEGGI» PER GLI STUDENTI DELLE SCUOLE SECONDARIE SUPERIORI

#### Abstract

The study presents the factorial validity of the version of the questionnaire on reading strategies, «Tell me how to read», aimed at the students of upper-secondary schools. The dimensions investigated correspond to the 7 strategies already validated in the previous versions (lower secondary and primary school, pilot study; Castellana, 2018, 2020a; Castellana & Lucisano, 2021): Identifying reading purposes; Activating previous knowledge; Making predictions; Identifying the most important information; Using graphic organizers; Controlling, Monitoring and a scale on the perception of difficulty. The questionnaire consisting of 57 items, was administered to a convenience sample of 1527 students, attending upper-secondary school. Results of the factor analysis confirm the seven-dimensional structure while Cronbach's alpha ranges from .836 to .925, with the total reliability coefficient of .933. Furthermore, data analyses reveal strengths and weaknesses of the readers in terms of the strategies they employ and suggest areas and paths for improvement of their reading skills, stressing once again the importance of tools aimed at measuring the use of metacognitive strategies.

\* This paper is the result of the joint work of the two authors. Sections 3, 4 and 5 were written by G. Castellana while Sections 1, 2 and 6 were written by S. Mitrovic.

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*Keywords:* Metacognitive knowledge; Reading comprehension; Reading strategies; Upper-secondary school; Validation.

#### 1. The importance of metacognitive reading strategies for task performance improvement

There have been a number of international studies on the direct teaching of metacognitive strategies in the field of reading and reading comprehension in the last several decades (Brown, 1978; Paris, Lipson, & Wixson, 1983; Jacobs & Paris, 1984; Palinscar & Brown, 1984; Paris, Cross, & Lipson, 1984; Brown, Armbruster, & Baker, 1986; Paris & Winograd, 1990; De Beni Pazzaglia, 1995; Pressley & Afflerback, 1995; Pressley, 2000; McEwan, 2004; Borkowski & Muthukrishna, 2011). The research done in the field has shown, in different contexts, that readers' awareness of their own understanding process and the ability to control and direct their thoughts while reading can improve the quality of their performance.

Teaching readers to be metacognitive means providing them with tools to examine and understand how the processes work, but above all, equipping them with the means to recognise and respond to complex tasks. Assuming a metacognitive approach when dealing with a task implies, first of all, seeing the task as a problem to solve; with regard to reading, it implies putting oneself in front of the text with the attitude of a person who knows how to make assumptions about it, follow the clues, formulate hypotheses, and be intrinsically motivated to face the activity with a mind in search for a solution.

The meta-analyses reported by Hattie (2012) provide a further confirmation of the evidence of NICHD studies, 2000; RAND, 2002; IRA, 2003, 2007; PISA, 2009, and Eurydice Report, 2011, in which the strategic component is seen as one of the factors that discriminate between «good and bad readers». In addition, the studies have demonstrated that teaching learning strategies can have a considerable beneficial impact on programmes for improving reading comprehension skills.

In Italy, controlled studies and experimental research done through metacognitive programmes (Cornoldi, 1995; De Beni & Pazzaglia, 1995; Calvani & Chiappetta Cajola, 2019; Castellana, 2020) demonstrate that there are improvements that can be made in the area of cognitive development and learning itself.

The challenge that teachers face is to encourage a connection between strategy and competence, by promoting ways that help transform a sporadic use of the strategic corpus into the acquisition of a more fluid and

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automatic ability. Through explicit teaching (Calvani, 2009), a teacher can actually explain and model reading strategies, by stressing the importance of breaking down a task into its parts, reducing in that way its complexity and allowing the student to become aware of how those parts combine together and interact with each other.

Finally, construction of tools aimed at measuring awareness and use of reading strategies has origins in the desire to provide teachers with methodological support to design lessons. According to Paris *et al.* (1984) and Schmitt (1988), a teacher with a more extensive knowledge of the practices can provide a guided practice for planning and improving educational programmes.

#### 2. Construct and dimensions: primary and lower-secondary school and university pilot study validation outcomes, summary

The design and development of «Tell me how you read» questionnaire, as well as its previous versions, calibrated with three different school cycles (Castellana, 2018, 2020a, 2021) are based on the research and theoretical background previously described. The first questionnaire was designed as part of a research project aimed at improving comprehension in lower-secondary school (Castellana, 2020b). *Table 1* shows that the construct consists of seven dimensions, five out of which are the ones suggested by the Eurydice Report – *Teaching to read in Europe: Contexts, policies and practices* (2011).

A dimension relating to reading purposes, in line with the National Guidelines for the 2012 curriculum (p. 32), has been added to the five dimensions suggested in the report to promote and encourage effective and conscious strategic choices in the learner. The meaning that the concept of strategy assumes within the metacognitive approach is the one of «a series of cognitive operations aimed at achieving a goal» (De Beni & Pazzaglia, 1995, p. 87), thus changing the passive attitude of the students towards reading and providing them with a purpose specific to the task and use contexts (Lucisano, 1989; Lorenzi, 2002).

The seventh dimension was introduced with the aim of revealing the difficulties that students experience when reading: a scale relating to the perception of difficulties. It refers to the types of behaviour that indicate that a reader is experiencing difficulties and problems for the solution of which they are not prepared. Recognising such situations is essential not only to be able to provide a solution to comprehension problems, but also to identify different states of frustration which are then transferred to reading and consequently to learning as well (Castellana, 2018).

Dimensions	Description
1. Knowing how to identify and giving oneself reading purposes	Differentiate reading purposes and types of text in order to adopt a flexible and task-appropriate approach; look for the most appropriate reading strategies that correspond to the instructions and the specific use situation.
2. Activating prior knowledge	Use previous knowledge, connect written texts with personal experience, culture and knowledge before, during and after reading.
3. Making assumptions and hypotheses about the text	Formulate questions about the text and answer them; make assumptions about the content.
4. Identifying the most important information and text summarising	Summarise a text focusing on the most important information; identify the characters, events, places, time of action, how and why the action takes place.
5. Using graphic-textual organisers to understand, remember and make connections between different pieces of information	Making connections between different parts of a text; establish the chronology and recognise the causality of events; create visual representation in the form of diagrams; convert written text into graphs, tables, grids, lists, etc.
6. Controlling and monitoring the process of understanding	Check / monitor own understanding, be aware of one's own difficulties; be able to clarify words and parts not immediately understood; paraphrase parts of a text using one's own words.
7. Perception of difficulty	A control scale that concerns the perception of the difficulties that a student encounters while reading a text.

Table 1. – Reading strategies questionnaire «Tell me how you read» dimensions (Castellana, 2018).

In order to build an easy-to-use tool for teachers as well as have a simple means for tabulating answers, a standardised close-ended questionnaire was chosen. The items are made up of statements describing reading habits and students are asked to choose one of the points of a five-point frequency scale (never, rarely, sometimes, often, almost always). The idea was to arrive at a tool with more complex item statements, appropriate to a more mature and conscious reading style and, above all, focussed on higher-order thinking skills. Consequently, statements have been added to each construct dimension. The initial version of the questionnaire contained 82 items and was administered in a pilot study involving 543 students (Castellana & Lucisano, 2021) attending upper-secondary schools and Primary Education Sciences degree course at the Sapienza University of Rome. The validation of the new version of the questionnaire containing 57 items specifically for high-school students is the aim of this study.

#### 3. METHODOLOGY: SAMPLE DESCRIPTION AND QUESTIONNAIRE ADMINISTRATION

The validation of the questionnaire was part of a broader survey on motivation to read conducted within 35th PhD Cycle in «Culture, Education, Communication» of the Department of Sciences of Education, Roma Tre University<sup>2</sup>.

A convenience sample was used to gather participants: upper-secondary school students from lyceums, technical and professional schools. The students participating in the survey come from nine regions.

In total, data from 1527 students from 15 schools were collected (841 female and 686 male). *Tables 2* and *3* provide information on the regions of origin and school grades.

•	
School type	No of students
Lyceum	489
Professional school	471
Technical school	567
Total	1527

Table 2. – Number of students per school type.

J	1 8 9 8
Region of origin	No of students
Calabria	52
Campania	176
Molise	121
Marche	372
Apulia	237
Sicily	163
Tuscany	127
Lazio	279
Total	1527

Table 3. – Number of students per region of origin.

 $<sup>^{\</sup>rm 2}$  The research project is still ongoing and was designed by Beatrice Eleuteri, a PhD student.

The questionnaire was administered online, from October 2021 to April 2022.

The maximum allowed time was an hour, and it included the presentation of the questionnaire, its purposes and completion (40-45 minutes). An alphanumeric code was assigned to each student to guarantee their anonymity.

#### 4. Data analyses and results

Exploratory factor analysis was performed using SPSS 22. Initially, the 57 items of the pilot study questionnaire were examined and factors extracted using the method of maximum likelihood and Oblimin rotation<sup>3</sup>.

The initial scree test revealed a first major factor and other three major factors. Three more factors, extracted in the validation of previous questionnaire versions, were considered significant (seven in total), while the curve begins to flatten at the eighth factor (*Fig. 1*).



Figure 1. – Scree plot.

<sup>&</sup>lt;sup>3</sup> An Oblimin rotation was chosen because it allows for correlation between the latent factors and therefore distinguishes better among them (Gallucci & Leone, 2012).

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Dimensions / Factors	Item no.	Loading range	Chronbach's alpha	Mean	Item Example
1. Knowing how to identify and giving oneself reading purposes	8	From .774 to .434	.892	3.45	I adopt different approach to reading depending on the type of test I need to read.
2. Activating prior knowledge	10	From .788 to .413	.896	3.47	I try to connect what I read to my personal experience.
3. Making assumptions and hypotheses about the text	5	From .822 to .518	.836	3.38	When reading a text, I like to make assumptions about it.
4. Identifying the most important information and text summarising	8	From .774 to .410	.866	3.21	After reading a paragraph, I summarise it in writing.
5. Using graphic organisers to understand, remember and make connections between different pieces of information	7	From .928 to .555	.925	3.01	Designing a map or outline helps me remember/memorise what I have read.
6. Controlling and monitoring the process of understanding	9	From .743 to .435	.862	3.83	If I realise that I do not understand what I have read, I read it again.
7. Perception of difficulty	5	From .705 to .510	.836	2.56	When I read, I get lost at a certain point and I don't know what it is about anymore.
Total reliability	55		.933	3.42	
· · · ·					

Table 4. – Reliability of the dimensions and questionnaire.

*Table 4* shows the results of the factor analysis performed on the entire sample data. Items with loadings lower than 0.350 (Barbanelli, 2003) as well as those cross-loading over two factors were eliminated. The final ques-

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tionnaire contains the remaining 55 items and seven dimensions hypothesized in the construct definition (Castellana, 2018). The table explains the number of items correlating to each factor, loading ranges, reliability and means<sup>4</sup> of an example item per factor. The cumulative variance percentage of the questionnaire was 55.43%.

The correlation matrix below confirms good construct validity (Tab. 5).

Factor correlation matrix							
Factor	Giving purposes	Using organisers	Perception of difficulty	Hypothesising	Identifying	Controlling	Activating prior knowledge
Giving Purposes	1						
Using organisers	.253	1					
Perception of difficulty	143	159	1				
Hypothesising	.483	176	033	1			
Identifying	.291	.613	065	.174	1		-
Controlling	.462	.222	172	.286	.318	1	
Activating prior knowledge	.599	.208	129	.567	.189	.466	1
Extraction meth	nod: maxir	num likelih	ood.				
Rotation metho	d: Promax	with Kaise	r normalisat	ion.			

*Table 5. – Factor correlation matrix.* 

#### 5. Descriptive statistics and standardisation of scales

The mean score of raw data was 184.81, with a standard deviation of 28.85, while the maximum score achievable is 275 (*Tab. 6*).

*Table 6 – Descriptive statistics.* 

	No.	Min	Max	Mean	SD
Punteggio Questionario sulle strategie di lettura	1527	77	265	184.81	28.85

 $^4$  The mean refers to the value obtained on a five-point scale (never = 1, rarely = 2, sometimes = 3, often = 4, almost always = 5).

ECPS Journal – 26/2022 - https://www.ledonline.it/ECPS-Journal/ Online ISSN 2037-7924 - Print ISSN 2037-7932 - ISBN 978-88-5513-090-5 In line with the results of national and international reading surveys (OECD, 2009, 2018; National Test Report INVALSI 2022), there is a statistically significant difference [ANOVA; F(2, 1526) = 47.31; p < .05] between the points of female students (g-score equal to 191.11) and the one of male students (177.07).

As regards the difference between single factor means (*Tab. 7*), the significant ones are those relating to Activating previous knowledge and making connections with own experience [ANOVA; F(2, 1526) = 28.33; p < .05], Identifying the most important information [ANOVA; F (2, 1526) = 30.25, p < .05], Using graphic organisers [ANOVA; F(2, 1526) = 30.13; p < .05] and Controlling [ANOVA; F(2, 1526) = 41.83; p < .05].

	Female	Male
-	Mean	Mean
Perception of difficulty	2.55	2.57
Giving purposes	3.49	3.39
Activating previous knowledge	3.60	3.30
Hypothesising	3.41	3.34
Identifying	3.44	2.94
Using organisers	3.21	2.77
Controlling	3.98	3.66

Table 7. – Differences in the mean between female and male students.

The strategies that seem to be used most frequently by the students in question are those relating to the Controlling and monitoring the process of understanding, with the mean in the «often» band. Female students more frequently tend to Make connections with their own experience while reading, Identify and select the most information and Use graphic organisers. The mean of Perception of difficulty is low being a result of «rarely» and «sometimes» as answers.

To standardise the scores and have a clearer idea of the measures detected, the scores were grouped into five levels: 1 (low), 2 (medium-low), 3 (medium), 4 (medium-high), 5 (high), each the width of one standard deviation. The following graph (*Fig. 2*) illustrates the distribution of the students in the sample in relation to the total score obtained in the questionnaire. The overall scores show a normal distribution and therefore adequately describe the differences present in the sample (mean 3.42; median 3.41; mode 3.19; asymmetry 160; kurtosis 125).



Figure 2. – Frequency distribution of scores into levels.



■low ■low-medium ■ medium ■ medium-high ■ high

Figure 3. – Standardisation of questionnaire scales.

ECPS Journal – 26/2022 - https://www.ledonline.it/ECPS-Journal/ Online ISSN 2037-7924 - Print ISSN 2037-7932 - ISBN 978-88-5513-090-5 The same standardisation was performed for single strategies.

In *Figure 3*, we can see several relevant issues. The first one relates to the Perception of difficulty where the items ask students to report difficulties and problems they experience on the five-point scale (from «never» to «almost always») such as: difficulty concentrating and memorising, difficulty orienting in the text, ability to identify the most important information, loss of confidence and discouragement <sup>5</sup>. Unlike the factor mean (2.56), as previously mentioned, in the range of «rarely» - «sometimes», the frequency distribution shows that there is a considerable number of students, 35% (N = 536), who experience difficulties of this kind or feel anxiety and discomfort when reading.

Being able to identify discomfort when reading becomes essential not only as a confirmation of teachers' assumptions about the difficulties, but also as a means of identifying different states of frustration that affect learning negatively.

#### 6. CONCLUSION

Various research has shown that teaching students to use metacognitive reading strategies can improve their performance significantly. To define the reading strategies to teach, research tools, such as questionnaires on the strategies that students employ and the difficulties they experience are essential. This research project, aimed at improving reading comprehension, started with a questionnaire designed for students of lower-secondary school (Castellana, 2020b).

The latest version of the questionnaire has once again proven to be a reliable and valid tool for identifying students' strengths and weaknesses in relation to reading comprehension. Each of the dimensions provides a starting point for the improvement of reading skills while the information obtained from data interpretation indicate what kind of compensatory actions can help both design and reach course objectives. The items, being at the same time descriptors, provide an example of the process breakdown, which teachers can transform into techniques to teach (Castellana, 2018, 2020a, 2020b) while students can use them for self-evaluation.

Teaching students to read needs to include cognitive strategies and techniques that will be readily available at the onset of comprehension dif-

<sup>&</sup>lt;sup>5</sup> Some of the item examples are: «When a text gets more difficult, I get discouraged and I don't understand what I am reading anymore»; «When I read, I get lost at a certain point and I don't know what it is about anymore».

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ficulties (Elliott, Faust, & Pressley, 1986). Identifying the difficulties they experience by means of a valid tool is a useful starting point that can help teachers arrive at a mix of methodologies transferable to other areas of knowledge and subjects.

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#### Abstract

Lo studio presenta la validità fattoriale del questionario sulle strategie di lettura «Dimmi come leggi» nella versione per il triennio della scuola secondaria di II grado e studenti universitari. Le dimensioni indagate corrispondono alle 7 strategie già testate nelle precedenti versioni (scuola secondaria di primo grado e scuola primaria; Castellana, 2018, 2020a; Castellana & Lucisano, 2021): Identificare scopi di lettura; Attivare conoscenze pregresse; Fare previsioni sul testo; Selezionare informazioni principali; Usare organizzatori grafico-testuali; Controllare il processo; L'auto-percezione delle difficoltà. Il nuovo questionario, costituito da 57 item, è stato somministrato a un campione di 1527 studenti appartenenti a istituti della scuola secondaria di secondo grado. Gli esiti dell'analisi fattoriale hanno confermato il modello a 7 dimensioni dei precedenti strumenti con valori di affidabilità delle scale che vanno da .836 a .925 e con l'affidabilità dell'intero strumento pari a .933. Le analisi eseguite sui dati rivelano i punti di forza e di debolezza dei lettori rispetto alle strategie impiegate e suggeriscono aree e percorsi di miglioramento delle proprie capacità di lettura, sottolineando ancora una volta l'importanza di strumenti volti a misurare l'uso delle strategie metacognitive.

*Keywords:* Lettura e comprensione; Metacognizione; Scuola secondaria di secondo grado; Strategie di lettura; Validazione.

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