

# Dyslexia in the university stage: a view from clinical linguistics

---

María Alicia Serna-Pinto <sup>a</sup>

---

a. Linguist. University professor. Language and Education Studies Research Group, Universidad Tecnológica de Pereira. <https://orcid.org/0000-0001-6973-6524>

**DOI:** [10.22517/25395203.25236](https://doi.org/10.22517/25395203.25236)

## **Abstract**

The objective of this paper is to reflect, from the perspective of clinical linguistics, on how students with dyslexia have faced the challenges and difficulties involved in reading scientific and academic texts during university education. Reading at the university has a higher level of complexity, it is characterized by the use of referred discourse, the control of discursive genres characteristic of each area of knowledge and using a specialized lexicon. Through the analysis of experiences of professionals with dyslexia and the considerations of researchers on the subject it is concluded that it is necessary to promote interdisciplinary research exercises with the aim of helping the dyslexic student to overcome the challenges of university education.

**Keywords:** dyslexia, young adult, clinical linguistics, reading.

## **Resumen:**

El objetivo de esta comunicación es reflexionar, desde la lingüística clínica, en torno a cómo los estudiantes con dislexia han afrontado los retos y dificultades que implica la lectura de textos científicos y académicos durante la formación universitaria. La lectura en la universidad tiene un mayor nivel de complejidad, se caracteriza por el uso del discurso referido, por el dominio de los géneros discursivos propios de cada área del saber y por el uso de un léxico especializado. A través del análisis de experiencias de profesionales con dislexia y de las consideraciones de investigadores sobre el tema, se concluye que es necesario promover ejercicios de investigación interdisciplinar con el objetivo de ayudar al estudiante disléxico a superar los retos de la educación universitaria.

**Palabras clave:** dislexia, joven adulto, lingüística clínica, lectura

## **Introduction**

Dyslexia during primary education has been extensively researched, which has allowed the consolidation of batteries for its diagnosis and evaluation of the competencies, skills and processes involved in reading; in addition, didactic and playful tools have also been created to help the infant to read. However, as for university education, there are still large gaps in terms of reading.

It is evident that the greater the refinement of linguistic theories, the greater the possibilities of improving diagnoses and therapeutic approaches to language pathologies. Therefore, the aim of this paper is to reflect from clinical linguistics on how students with dyslexia have faced the challenges and difficulties involved in reading scientific and academic texts during their university education.

Initially, the relationship between clinical linguistics and language disorder is presented. Subsequently, the brain's processing of reading and how it is affected by dyslexia is explained. Then, some experiences of people with dyslexia during their professional training are presented and, finally, the challenges of professional training in relation to academic reading are presented, in order to broaden the research outlook to support young adults with dyslexia in a more timely manner during their university education.

### **1. Clinical linguistics and language disorders**

Clinical linguistics is a field of linguistics that emerged in the 1980's as an application of linguistics to aspects of language impairment. According to Otero, the purpose of clinical linguistics is "to describe speech, language, ultimately, pathological communication and to contribute to its therapy" (1). The need for linguistic knowledge is made manifest in the Quirk report where it is generally accepted that language therapists need to apply linguistic concepts and analytic techniques in their routine clinical practice (2).

Regarding the specific contributions of clinical linguistics, Marrero considers that it should contribute to:

1. Contribute to the training of speech therapists (logopedics, phoniatrics, etc.) by providing the necessary linguistic foundations for the development of their work.
2. Collaborate with the professionals mentioned above in tasks requiring greater linguistic specialization: the linguist as an expert for support, consultation or cooperation.
3. Organize and establish a taxonomy of language disorders from a linguistic point of view: linguistics as a structuring axis of the field (3).

Regarding this last point, it is evident that the greater the refinement of linguistic theories, the greater the possibilities of improving diagnoses and therapeutic approaches to language pathologies. An illustration of this topic is the progress in the description of the pragmatic component of language, which has improved the understanding of disorders generated by damage to the right hemisphere, such as problems in processing and understanding the prosodic and affective features of language, such as irony, double meaning and metaphor, and has even had a positive impact on the understanding of the autistic spectrum.

Although aphasia has been the focus of interest since the classical studies of psycholinguistics, more and more researches are being done in fields ranging from dementia to specific syndromes (2). Regarding dyslexia, the contributions of the linguist Luz Rello, whose work has been oriented towards the creation of tools to improve reading and writing skills in the population between 7-17 years of age and has been scientifically validated, are relevant. One of the digital tools created by Rello is Dytective (4), which contains a series of playful activities to improve literacy by integrating parameters that allow the analysis of performance in language skills, working memory, executive functions, and performance. One of the advantages of the platform is that a teacher or researcher can register the students and monitor the results.

Precisely in the case that concerns us in this paper, we are interested in dealing with dyslexia and dysgraphia in the young-adult university population as part of the research project "Reading and writing for the learning of language sciences in the Bachelor's Degree in Literature and Spanish Language at the Universidad Tecnológica de Pereira-UTP", registered in the Vice-Rectorate of Research of the UTP with code 4-21-9.

Both dyslexia and dysgraphia are the subject of interest and concern during the early school years. However, awareness of such disorders and the possibility of consulting a specialist was not popular in Colombia until just a few decades ago. Previously, the lack of training of general teachers in writing and reading disorders, the lack of guidelines from the Ministry of Education and the complexity of accessing the Colombian health system, in general, did not support a healthy culture of observation and care of language disorders (5). Nowadays, the primary schooling period receives special treatment.

In this regard, Jaime Castellanos (6) proposes a training battery to work

with children from 4 to 6 years of age. At the psychomotor level, the activities include fine motor skills in order to exercise hand-eye coordination (either by means of tracing paths, mazes and other games), laterality and gross motor skills. As for perceptual skills, activities are carried out to strengthen visual discrimination and auditory functionality. In terms of cognitive processes, the battery exercises the processes involved in learning to read, such as observation, attention and memory.

On the other hand, Obando and Valbuena (7) propose a pedagogical battery using the GEEMPA methodology for children from 6 to 9 years of age with specific language disorders (SLD). The battery includes activities to strengthen literacy through games that promote learning by stages.

Pinilla (8) points out that although progress has been made in therapeutic methodologies and techniques for children, on the contrary, in the Colombian university education stage, research has not advanced rapidly. One of the consequences of this phenomenon is that of university desertion, since “students feel that they do not have the capacity to achieve a career, as would another young person of their age” (8).

The public university environment is complex since the student population presents diverse socioeconomic conditions and not all those affected have a clinical diagnosis. In addition to this, the university education stage is characterized by the entry into the academic culture, where writing and reading are privileged as habitual practices of the dynamics of intellectual production. At university, reading and writing are done in order to learn, in this sense, university students have a heavy reading load of academic and specialized texts each semester, with relatively short deadlines.

## **2. Brain processing of reading and dyslexia**

Learning to read and write requires explicit teaching with an adequate methodology, since both reading and writing are not natural functions of the human brain, that is to say, unlike speech, there is no center in the brain specialized in reading or writing (9,10,11,12). The process of reading and writing involves establishing neuronal interconnections between the visual system and the linguistic system; these interconnections modify the left occipital temporal area, called by Dahanne “letter box or word box” (11). Likewise, it is considered that three processing systems are involved in reading:

- a. Orthographic:** system in which the letters or graphemes that make up words are identified.

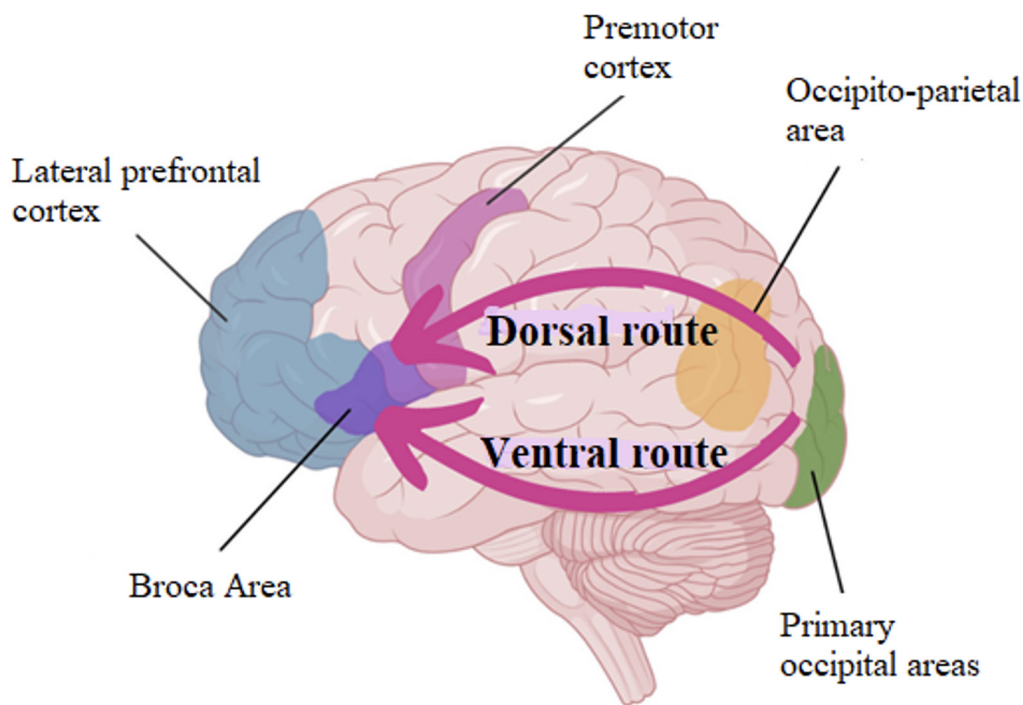
**b. Phonological:** system that assigns phonemes to graphemes.

**d. Semantic:** system that allows access to the meaning of words.

The most accepted theoretical model to explain the processes we execute when reading is the “double route” model. According to this model, there are two routes to read or go from the written word to its phonic realization. The first is the phonological or sub-lexical route that allows us to transform graphemes into phonemes and the second is the orthographic or lexical route that allows us to recognize written words more quickly or directly.

The phonological or sublexical route is mainly activated to read unknown words or pseudowords, this route uses the dorsal pathway that interconnects the visual areas of the occipital lobe with the occipital temporal area of the word box, the parietal temporal area, the angular and supramarginal gyri with Broca’s inferior frontal area (9,10,11). The primary occipital areas are involved in iconic memory and the occipito-parietal areas allow the recognition of graphemes and participate in short-term memory.

On the other hand, the orthographic or lexical route is activated in the presence of known and frequently used words and uses the ventral pathway that interconnects the occipital visual areas with the occipitotemporal area, the middle and inferior temporal areas and Broca’s area. Figure 1 shows the “dual pathway” of reading:



**Fig 1. Model of the double path in reading**

At a theoretical level, it is considered that there are transparent and opaque linguistic systems. Spanish is a transparent system because there is a correspondence between graphemes and phonemes, in that sense, any word can be read by means of grapheme-phoneme conversion. An opaque system, such as English, usually generates greater difficulties during the process of teaching reading and writing, since the graphic representation is not clear in relation to the phonemes. This particularity of the systems makes dyslexia problems more noticeable in opaque systems. Table 1 shows the different types of dyslexia:

**Table 1.** Types of dyslexia

Dyslexia		
Superficial	Phonological	Deep
Difficulty in relating the grapheme to the phoneme. Although Spanish is transparent, there may be a greater slowness in reading and the effect of word length.	The lexical route is preserved but the sub-lexical route has been affected, making it difficult for the person to read unknown words and pseudowords.	In this case both routes have been affected. Difficulties in reading both unknown and frequent words are present in this case.

### 3. Dyslexia in the university context

Dyslexia is defined by the DSM IV as “a learning disability that is neurological in origin, characterized by difficulties in correct or fluent word recognition and poor spelling and decoding skills despite adequate intelligence, instruction, and sensory skills” (13). The General Dyslexia Guide (10) indicates that students with dyslexia have problems with both reading accuracy and reading speed, according to the guide, “this limits them in terms of the number of cognitive resources they can use to perform comprehensive reading at the level required in school” (14)

Dyslexia persists throughout an individual’s life. In adolescents and adults, problems with phoneme encoding and recognition usually decrease, but compared to unaffected individuals, reading usually shows lower levels of automaticity, fluency, and speed.

At the university professional training stage, Galluzo (15) reports the case of a nursing student who relied on tape recorders to record classes or dictate voice notes. In addition, the university allowed her to have extra time to take exams.

In the Colombian university setting, Pinilla (8), in her role as a social worker, describes the case of 6 students with dyslexia from private and public universities in Bogota, Colombia. In the analysis of the stories, Pinilla points out that the main difficulties with reading were:

- Grammatical problems
- Word changes during reading
- Writing problems
- Problems relating paragraphs

To meet the challenges of professional training, each of the students was forced to seek personal strategies for support. Some of the strategies were repetition, imitating written work of peers, recording lectures, and then listening to them, asking someone else to read (8). Pinilla's research concludes that research on dyslexia in young adults and support tools are needed to help students meet the academic challenges of professional training.

Among the advances on the relationship between adulthood and dyslexia, neuropsychological and linguistic research has made progress in the characterization of dyslexia at the international level. Suárez Coalla and Cueto (16) evaluated the reading and phonological processing abilities of a group of thirty adults with dyslexia. Specifically, they evaluated phonological awareness, rapid automatic naming, lexical decision, word and pseudoword reading and text reading tasks. The results indicate high prevalence of difficulties in performing phonological awareness tasks, picture, and letter naming, long pseudoword reading, and lower reading speed.

In a study on reading fluency, Suárez Coalla et al., (17) found that prosodic features are also affected by dyslexia since the results indicate that the change of tone, depending on the type of sentence, presents difficulties since dyslexic readers do not anticipate the structure of the text.

#### **4. Reading and writing in a university context: challenges of professional training**

Each scientific community is characterized by the use of a set of texts, specialized lexical repertoires, complex discursive structures and rules for citing the referred discourses. The mastery of texts and their structures requires formal instruction, which is why universities offer lectures in reading and writing or oral and written communication. It is up to these areas to offer guidelines to help professionals in training to master the textual structures of their disciplinary field.

At the discursive level, these are the challenges of academic reading and writing support:

1. Know the specificities of the discursive genres of their disciplinary area.
2. Adequately handle the referred discourse.
3. Master the super, macro and microstructure of texts.
4. To increase the lexical repertoire, including the mastery of specialized lexicon.

Such aspects require a direct accompaniment and an effort by the student to regulate his own learning, for which he needs to employ a considerable amount of metacognitive strategies. Metacognition is the ability to think or reflect on how one is learning. In the case of reading, metacognitive strategies make it possible to control, monitor, regulate and evaluate the reading process, as well as to become aware of reading as a strategic activity. In this sense, if the learning-teaching of academic or specialized reading is already a great challenge, how much more so will it be for the brains of dyslexic people?

In this regard, Cuetos, Soriano and Rello (18) offer a series of metacognitive and didactic strategies to help the student in professional training to meet the demands of academic reading. Table 2 shows the strategies recommended by these researchers:

<b>Strategies to understand the text</b>	Perform first reading aloud or using a text-to-speech translator
	Underline or mark key words
	Specially marking definitions of key concepts
<b>Text reduction through visual strategies</b>	Use graphic diagrams
	Use mind maps
	Using iterative diagrams
<b>Memorization</b>	Use mnemonic rules (rhymes, associations, melodies, etc.)
<b>Strategies to maintain attention and concentration</b>	Focus on a single task
	No interruptions
	Alternate with short rest breaks

**Table 2. Strategies to guide reading, adapted from Cuetos, Soriano and Rello (18)**

While metacognitive strategies are useful for monitoring and regulating the personal reading process, further scientific research on dyslexia in the university context is needed.



Finally, based on the notion of linguistics as the structuring axis of the field (3), the importance of joining interdisciplinary efforts to analyze how prosodic features, the understanding of the discursive genre, the management of the referred discourse and the features of the textual micro and macrostructure are affected, since scientific texts are more complex. Likewise, considering that most of the referents are not concrete entities but abstract terms, it will be necessary to analyze what happens in the dyslexic brain to process such terms. Once it is possible to analyze and describe with greater precision the consequences of dyslexia in the processing of academic or scientific texts, it will be possible to support with better results the creation of therapeutic support tools for the university student with dyslexia.

**Acknowledgments:** To Marie Lourdes in France for her review and support in the development of this paper.

**Sources of funding:** none.

**E-mail correspondence:** maalserna@utp.edu.co

## References

1. Otero Cabarcas P. ¿ Dónde situamos las patologías lingüísticas? Consideración de la Lingüística Clínica como aplicación de la Lingüística. 2000; Actas del II Congreso de la Sociedad Española de Lingüística.
2. Garayzábal E. Lingüística clínica y logopedia. 2006; Madrid. Ediciones Antonio Machado.
3. Marrero V. Introducción a la lingüística aplicada a fines clínicos. 2000; Madrid, Universidad Nacional de Educación a Distancia.
4. Pardo Cardozo N. Prevalencia del trastorno específico de la lectura en una muestra de instituciones educativas de la localidad 19 de Bogotá. 2015; tesis para optar al título de Neuropediatra. Universidad Nacional de Colombia
5. Rello L. Dyctective. 2016; Disponible en: <https://www.changedyslexia.org/>
6. Obando A., y Valbuena A. Batería pedagógica de la metodología Geempa para los procesos de lectoescritura de niños entre las edades de 6 -9 años con trastorno específico del lenguaje del municipio de Ubaté. 2020; tesis para optar al título de Licenciado en Educación Especial. Fundación Universitaria Los Fundadores, Bogotá.
7. Jaime Castellanos. Diseño de una batería de aprestamiento orientada a la prevención de los efectos de la dislexia sobre la lectura y la escritura dirigida a niños de 4 a 6 años. 2018; Tesis para optar al título de Magíster en Educación. Universidad Autónoma de Bucaramanga. Bucaramanga.
8. Pinilla M. Las dificultades específicas de aprendizaje (DEA) en el ámbito universitario en Colombia. 2018; Tesis para optar al título de trabajadora social. Universidad Externado de Colombia. Bogotá
9. Cuetos F., y Domínguez, A. Lectura. En: Neurociencia del lenguaje: bases neurológicas e implicaciones clínicas. 2012; Madrid. Editorial Médica Panamericana
10. Montiel Ramos T. Lectura, escolarización y habilidades cognitivas. 2017; Paraguay. Universidad Iberoamericana.
11. Lebrero Baena MP., y Fernández Pérez MD. Lectoescritura, fundamentos y estrategias didácticas. Madrid. Editorial Síntesis.
12. Dahene S. El cerebro lector; 2014. Buenos Aires: Siglo XXI
13. American Psychiatric A. Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition: DSM-IV-TR®. United States of America: American Psychiatric Association; 200

14. ASANDIS- Asociación andaluza de dislexia. Guía general de dislexia. 2010.
15. Galluzo M. Dislexia, el problema de aprendizaje que sigue siendo invisible en el mundo laboral.
16. Suárez Coalla P y Cuetos F. Reading difficulties in Spanish adults with dyslexia. 2015; *Annals of Dyslexia* (65) p. 33-51
17. Suárez Coalla P, Álvarez Cañizo M, Martínez C, García N y Cuetos F. Reading prosody in spanish dyslexics. 2016; *Annals of Dyslexia* (66) p. 275-300.
18. Cuetos F, Soriano Ferrer M y Rello L. *Dislexia. Ni despiste, ni pereza.* 2019; Madrid: La esfera de los libros.