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# ADDRESSING THE WELL-BEING OF ESL STUDENTS WITH SPECIAL NEEDS IN ACADEMIA: APPROACHES AND RESOURCES

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**Abstract**: Our investigation focuses on second language acquisition/learning by students with special needs (SNSs) from the perspective of improving their well-being through effective inclusion policies, in accordance with EU's inclusive educational perspective. Such policies and choices are based on both the consideration of the neuropsychological mechanism of the SNSs (requiring/resulting in different cognitive styles), and specific teaching techniques and tools. To this end, we aim at promoting a reconsideration of some of the currently available strategies for promoting students' well-being, such as the ongoing studies in the field of assistive technology, which include software for facilitating L2 learning processes in dyslexic students and mind maps. There is significant interest at the moment in Italy in multidisciplinary conferences and initiatives such as the National Dyslexia Week, promoted by experts within schools and academia, as well as in numerous awareness-raising activities at various levels. The availability of resources, such as auxiliary care centers and special courses, where researchers, teachers, and computer programmers can interact, is of paramount importance not only for SNSs but also to enable teachers to cope with different learning styles. Overall, these and similar initiatives aim to promote both better teacher training in this area and reflection on existing approaches and techniques that can lead to more effective, less stressful educational interaction in a dimension of greater serenity and well-being.

**Keywords**: L2 acquisition/learning; dyslexic students; inclusive education; cognitive styles; teaching techniques/tools.

## *1. Introduction and aims*

In the banquet of consequences brought about by the COVID-19 pandemic, a widespread interest in the general mental health issues of adults and children and in students' well-being has emerged. Prolonged lockdowns and school closures caused a rise in dropouts and learning losses, worsening levels of satisfaction and well-being (among many others, see De Witte and François 2023; Leeb *et al.* 2020; Parents Together 2020; Patrick *et al.* 2020; U.S. Department of Education's Office for Civil Rights 2021).

Significantly, when Yale cognitive scientist Laurie Santos realised the impact of anxiety on her students, she created "The Science of Well-Being" on Coursera. Her "Psychology and the Good Life" course (started in 2018) has become the most popular in Yale's history, and her podcast series, *The Happiness Lab*, has more than 64 million downloads – far above the average in the bustling happiness advice industry. Concisely, her hope is that robust societal structures can be created to support the well-being of students and individuals because while it is possible to intervene and change behaviours in the short term, long-term improvements are much more difficult to achieve (Marchese 2023).

More broadly, we can say that students' well-being is now a recognised goal in all western education systems, especially for special needs students (SNSs).

Indeed, in the domain of inclusive education, we are witnessing an ongoing cognitive revolution that has taken its cue from more or less recent developments in studies on human and machine learning capabilities and artificial intelligence and is increasingly based on integrative software and tools. The availability of resources such as auxiliary aids centres and workshops where researchers, teachers and computer programmers can interact is of paramount importance. While the number of university support centres is slowly rising, albeit not as much as necessary, overall, awareness-raising initiatives have taken place at various levels to promote better training in this domain for teachers, including metacognitive reflections on the existing approaches and techniques through conferences and seminars. In Italy, recent events relating to dyslexia, which is of particular relevance to second-language teaching and a major focus of this study, include *La seconda lingua nelle diverse condizioni di apprendimento. Aggiornamenti e riflessioni sullo stato dell'arte in prospettiva socio-pedagogica* [The Second Language in Diverse Learning Conditions. Updates and Reflections on the State of the Art from a Socio-pedagogical Perspective] (Abbamonte and Cavaliere 2019), *Nei miei panni* [In My Shoes] (Italian Dyslexia Association 2022), and *Settimana nazionale della dislessia* (National Dyslexia Week 2022). Disseminating such initiatives and programmes can also make it easier for university teachers, who might not be familiar with such resources, to be engaged in these contexts so as to be better able to cope with the diverse cognitive styles and expectations of SNSs.

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The present study investigates aspects of second-language acquisition/learning, primarily ESL[1], for SNSs, particularly for students with dyslexia, from the perspective of improving their well-being in the academic setting and, consequently, their academic performances.[2] The main differences in these students' neuropsychological mechanisms (resulting in different cognitive styles), as well as the need for specific teaching strategies, techniques and tools, will also be illustrated.

## *2. ESL teaching-learning contexts and evolving needs*

### 2.1. Learning needs and the EU's inclusive educational perspective

In the contemporary educational scenario, meeting and possibly satisfying students' learning needs are pivotal parts of the syllabus design and planning of ESL teaching. Fundamentally, when considering human needs, one must take into account how they "arrange themselves in hierarchies of prepotency", as Maslow clarified (1943: 370). Maslow's theory of human motivation is still considered essential and is a widely quoted reference point in research (see also Figure 1):

> Maslow's pyramid of human needs […] has been one of the most cognitively contagious ideas in the behavioral sciences. Anticipating later evolutionary views of human motivation and cognition, Maslow viewed human motives as based in innate and universal predispositions (Kenrick *et al.* 2010: 92).


***Figure 1.*** Maslow's hierarchy of needs

[1] Second (or sequential) language acquisition can refer to the acquisition of any language that is sequentially learned/acquired after a first language is established. In this article, the focus is on English since it is the most widely taught second language in the Italian education system.

[2] It may be worth specifying that official statistical data about the number of school-age students worldwide is freely retrievable (see, among others, an analysis of the EU in Lodej 2016). In Italy, the only official source available is that of the Italian Ministry of Education, University, and Research (MIUR), which states that pupils with dyslexia constitute 1.3% of the total at primary school, and 3.8% of the total at secondary school. No data is available for university education. Greater insights into the academic scenario could be provided by longitudinal studies conducted by psychologists, psychiatrists, pedagogists and educators to record the problems of university SNSs. Such research, which would also require consistent funding, falls outside the scope of this study.

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Maslow defined man as the "perpetually wanting animal" (1943: 370). When a person's basic physiological needs (which include the need for safety and love) are satisfied, they are ready to feel higher needs, such as esteem:

> All people in our society (with a few pathological exceptions) have a need or desire for a stable, firmly based, (usually) high evaluation of themselves, for self-respect, or self-esteem, […] which [are] soundly based upon real capacity, achievement, and respect from others. These needs may be classified into two subsidiary sets. These are, first, the desire for strength, for achievement, for adequacy, for confidence in the face of the world, and for independence and freedom. Secondly, we have what we may call the desire for reputation or prestige […], recognition, attention, importance or appreciation (Maslow 1943: 381–382, our italics).

Significantly, such needs are also identified as basic needs, as is the need for self-actualisation. Furthermore, in Maslow's view, even if/when all the above-mentioned needs are satisfied, often,

> a new discontent and restlessness will soon develop, unless the individual is doing what he is fitted for. A musician must make music, an artist must paint, a poet must write, if he is to be ultimately happy. What a man can be, he must be. This need we may call self-actualization (Maslow 1943: 383).

The implications of Maslow's theory for the educational domain can hardly be overvalued. Concisely, any syllabus aiming at developing not only students' specific skills but also their potentialities (in other words, the holistic approach) must take it into account – all the more so for SNSs, especially students with dyslexia. Maslow attributes great importance (as preconditions for the satisfaction of basic needs) to the freedom to speak, express oneself, investigate and seek information (1943: 383) – dimensions of socio-cognitive interaction where communicative competence is paramount. Through effective communication based on cognitive capacities (perceptual, intellectual, learning), one is enabled to defend oneself, obtain justice, pursue fairness, etc. Additionally, an increasing number of colleges and universities now require a minimum of two years of foreign language teaching prior to graduation; hence, foreign language competence forms an integral and compulsory part of worldwide educational systems (Nijakowska 2010).

More specifically, in the EU scenario, the way to facilitate inclusion in contemporary societies passes through multilingualism, as the 2019 European Council Recommendation on a comprehensive approach to the teaching and learning of languages reminds us:

> In the Communication "Strengthening European Identity through Education and Culture" the European Commission sets out the vision of a European Education Area in which high-quality, inclusive education, training and research are not hampered by borders; spending time in another Member State to study, learn or work has become the standard; speaking two languages in addition to one's mother tongue is far more widespread; and

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> people have a strong sense of their identity as Europeans, as well as an awareness of Europe's shared cultural and linguistic heritage and its diversity. […] In its conclusions, adopted in Barcelona on 15 and 16 March 2002, the European Council called for further action in the field of education "to improve the mastery of basic skills, in particular by teaching at least two foreign languages from a very early age". […] Literacy competence and multilingual competence are defined among the eight key competences in the Council Recommendation on key competences for lifelong learning. […] Multilingual competence is at the heart of the vision of a European Education Area. With increasing mobility for education, training and work inside the Union, increasing migration from third countries into the Union, and the overall global cooperation, education and training systems need to reconsider the challenges in teaching and learning of languages and the opportunities provided by Europe's linguistic diversity (European Council 2019).

Not only are linguistic skills at stake in promoting the acquisition of a second or even third language, but so are identity issues and the crossing of national borders, which could open new spaces for SNSs where their neurodiversity could find more applications, thus satisfying their need for self-actualisation. Free mobility for everyone across Europe is an increasingly significant part of the European heritage. Furthermore, the European Agency for Special Needs and Inclusive Education is engaged in collecting data from Member States in a cross-country format in order to directly inform the work of national and European-level policy- and decision-makers with a focus on SNSs (see also note 3). Indeed, the specific needs of learners with dyslexia in particular require special approaches and strategies (as illustrated below).

### 2.2. Language teaching insights for SNSs

The evolution of language teaching is consistently inspired by developments in psychology and cognitive sciences. Concisely, we can say that the advancement of the communicative approach at the turn of the last century led to consistent changes in teaching methods: gradually, communicative competence and 'can do' rather than grammatical accuracy and 'cannot do' became the main teaching objectives of ELT, an attitude that favours SNSs.

In particular, behaviouristic approaches have proved fruitful for SNSs: "Behavior analysis has already contributed substantially to the treatment of children with autism, and further gains can result from more use of Skinner's analysis of language in Verbal Behavior (1957) and in the resulting conceptual and experimental work" (Sundberg and Michael 2001: 698). Interestingly, valuable insights for teaching SNSs could be found in what are considered alternative or humanistic methods, such as Caleb Gattegno's "Silent Way" (1963). Critical of the language teaching methodology of his days, Gattegno emphasised the importance of utilising language for self-expression and, hence, the need for self-reliance. To achieve such a condition, teachers should focus on how students learn, allow experimentation and minimise interference. The 1970s community language learning (CLL) approach and James Asher's total physical

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response method occupy a similar vein (1969), but neither ever acquired wide popularity.

Conversely, Howard Gardner's theory of multiple intelligences (Gardner 1983/2011) became very popular among educators[3] (Brualdi Timmins 2019; Almeida *et al.* 2010). This inspirational theory challenged the notion that there is only one intellectual capacity, which can be satisfactorily measured with standard psychometric instruments. Gardner theorised that by addressing the diverse and multiple intelligences students can display, it is possible to develop more personalised syllabi and achieve better educational results (Davis *et al.* 2011), as is explained in more detail below.

Furthermore, the importance of consistent exposure to a second language in a variety of contexts is now a shared notion, as is the need to take into account the affective variables and lower the affective filter in the classroom to enhance natural language acquisition (Krashen and Terrell 1983: 38–39), which is especially useful when teaching SNSs.

Concisely, the integration between the natural and cultural dimensions of language acquisition and the attention to the mental structures and cognitive repertoires involved (Jackendoff 2007) is relevant in this domain, as are the contributions of psycholinguistics (mental processes in relation to language structures, native/second language acquisition and bilingualism, and language disorders and the relation between human and artificial language) and neuroscience/neurolinguistics (brain mechanisms for language comprehension/production and abstract knowledge structure), which are of particular importance when dealing with dyslexia.

## *3. Dyslexia: An introductory overview*

Dyslexia (from δυσ- "difficulty/lacking" and λεξία "words") has emerged as an increasingly important condition for learning – especially for second-language learning. From 1950 to 2020, there was a substantial increase in research and publication on dyslexia, with foci on literacy at the symptomatic level, phonological awareness at the cognitive level, and second language learning as comorbidities (Helland 2022). There is now a general agreement on the multifactorial nature of dyslexia. In more detail, one of the most widely accepted definitions is the one adopted by the International Dyslexia Association (IDA n.d.-a), which describes dyslexia in relation to its biological, behavioural, cognitive and environmental levels (Kormos and Smith 2012; Shaywitz and Shaywitz 2020). Neurological in its origin (biological level), dyslexia is characterised by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities (behavioural level). These difficulties typically result from a deficit in the phonological component of language, resulting in specific disabilities in learning to read, not due to extraneous

[3] Gardner's multiple intelligences are as follows: visual-spatial, linguistic-verbal, logical-mathematical, body-kinesthetic, musical, interpersonal, intrapersonal, and naturalistic. Gardner and colleagues have also considered two additional intelligences: existential and pedagogical (Cherry 2023).

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factors[4], that are often unexpected in relation to other cognitive abilities (cognitive level) and may require the provision of effective classroom instruction (environmental level).[5] Dyslexia is considered a condition that results solely in a reading deficit that can be overcome by providing students with support in reading (Stirrups and Mitchell 2023).

The dyslexic population is highly heterogeneous since dyslexia presents itself in many degrees, ranging from mild to severe. When dyslexia is mild, a learner may simply need to work harder than their peers to acquire decoding and encoding skills. In severe cases, reading and spelling may be completely interrupted if strategic interventions and appropriate accommodations are not implemented (Snowling *et al.* 2020).

Although there are not yet any official diagnostic types of dyslexia, a classification system has been proposed by Zoubrinetzky *et al.* (2014):

- Phonological dyslexia (also called dysphonetic or auditory dyslexia): people have difficulties processing the sounds of individual letters and syllables and cannot match them with written forms.
- Surface dyslexia (also called dyseidetic or visual dyslexia): people have difficulty in recognising, learning and memorising whole words, probably resulting from visual processing difficulties in the brain.
- Rapid naming deficit: people experience difficulties in naming a letter, number, colour, or object quickly and automatically.
- Double deficit dyslexia: people show deficits in both the phonological process and naming speed. The majority of the weakest readers fall under this category (Heim *et al.* 2008).

According to the National Center for Learning Disabilities and current literature (see, among others, Catt *et al.* 2024; Lorusso *et al.* 2024), dyslexia may co-occur with several other learning disabilities that involve the brain struggling to process information in various ways, such as dyscalculia, dysgraphia, dyspraxia, and attention deficit hyperactivity disorder.[6]

[4] These include sensory acuity deficits, severe emotional problems, acquired brain damage and inadequate educational opportunities (Valdois 2010).

[5] Dyslexia can vary from person to person, and accordingly, different levels and ages require the implementation of distinct strategies and (teaching) resources (see also IDA 2000).

[6] Dyscalculia affects the ability to acquire arithmetical skills and numbers and is related to difficulties like struggling to recognise numbers or do simple maths equations and getting maths symbols mixed up. People with dyscalculia can have visual-spatial difficulties and language-processing difficulties as well (Butterworth *et al.* 2011). Dysgraphia is an impairment of handwriting ability characterised chiefly by very poor or often illegible writing (writing letters the wrong way round, randomly misspelling words, mixing up lower- and upper-case letters) or writing that takes an unusually long time and great effort to complete. The term dyspraxia comes from the word "praxis" ("doing, acting") as movement is an issue, impacting an individual's ability to plan and process motor tasks. It is an impairment or immaturity of the organisation of movement, specifically in how the brain processes information, which results in messages not being properly or fully transmitted. Dyspraxia affects the planning of what to do and how to do it. It affects fine and gross motor skills, including coordination, and may result in difficulty stacking bricks or messy handwriting. Dyspraxic children may suffer from clumsiness, slightly slurred speech, awkwardness with walking or short-term memory loss (Portwood 1999). Attention deficit hyperactivity disorder (ADHD), previously known as attention deficit disorder

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Current research suggests dyslexia is present at birth and is hereditary, though adults who have suffered a brain injury, stroke or dementia may develop the symptoms of dyslexia (Pennington and Gilger 1996). The underlying cause of dyslexia remains unknown (Hoeft *et al.* 2006), although "studies show definite brain differences between dyslexics and nondyslexics" (Wood 2006: 18), as represented in Figure 2.

***Figure 2***. Representing brain differences between dyslexic and non-dyslexics

A set of anomalies has been found in reading-related pathways in the brains of dyslexic persons (Temple 2002), whose perception of written language can be better understood from Figure 3. In this screenshot taken from the documentary "Nei miei panni" [In My Shoes], a group of university doctors participate in tests designed to experience the reading obstacles SNSs encounter in their educational journey (Associazione Italiana Dislessia/Italian Dyslexia Association 2022).

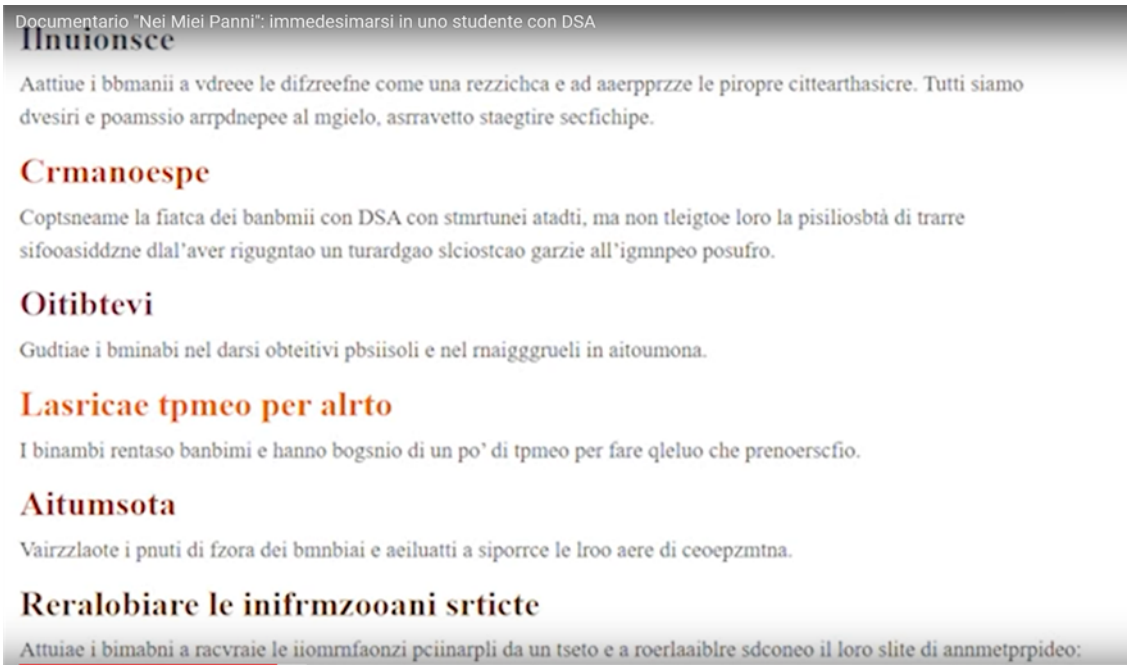


***Figure 3.*** Screenshot from the documentary "Nei miei panni", showing Italian sentences where the orthography of the words is disrupted.

(ADD), has been marked since 1994 by an ongoing pattern of inattention and/or hyperactivity-impulsivity that interferes with functioning or development (Barkley 2006).

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### 3.1. Debunking some myths about dyslexia and learning difficulties

In order to better understand (and consequently deal with) dyslexia (Shaywitz *et al.* 2003), Table 1 summarises and disproves some of the most commonly misheld beliefs related to it (Wadlington and Wadlington 2005).

**Table 1.** Common assumptions about dyslexia (ACTFL 2012; Bruck 1978)

| Assumption | FALSE because… |
|---|---|
| Dyslexics cannot read | They can learn to read, write and spell, but they process language differently than the average person and thus require different training. |
| Dyslexics see/read things backwards | Reversing letters or numbers is a normal part of development and, on its own, is not a warning sign of dyslexia in the early years. However, if letter reversal does not go away after a few years of handwriting practice, it may be a sign of dyslexia. |
| Dyslexia is a vision or auditory problem | Studies suggest that dyslexia is not caused by vision problems but results from individual differences in the parts of the brain. It appears to be linked to certain genes that affect how the brain processes reading and language. |
| Dyslexia is rare | Some studies and statistics report that 1 in 5 people have dyslexia. |
| People with dyslexia typically have lower average intelligence | People with dyslexia typically have normal or even above-average intelligence. |
| Dyslexic learners should not study a foreign language | The study of a foreign language is recommended for all students of all ability levels. |

According to the literature, dyslexia is a widespread disorder estimated to affect between 15 and 20% of the population and should be perceived as a different way of processing language, leading to different learning abilities. It can also come with positives, such as enhanced creativity, an ability to see the big picture, and a facility for bringing together material from different subject areas, which translates into keen problem-solving skills (Eide and Eide 2011). Some authors even see dyslexia as an advantage or a gift (Davis and Braun 2013), as confirmed by Carol W. Greider, the 2009 Nobel Laureate for Medicine:

> Learning compensatory skills also played a role in my success as a scientist because one has to intuit many different things that are going on at the same time and apply those to a particular problem. Perhaps my ability to pull more information out of context and put together difficult ideas may have been affected by what I learned to do from dyslexia (Quoted in Vaccarino 2013).

Hudson claims that people have to "understand the talents that go along with dyslexia […]. It's a package of strengths, and some areas of challenge […]. It is not a character flaw" (quoted in Embracing Dyslexia 2013). Nonetheless, dyslexia may severely affect self-perception. Hence, early identification is

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essential because these learning disabilities are more successfully treatable with early intervention – in children, the brain is potentially more malleable for the rerouting of neural circuits (Shaywitz 2008). Furthermore, before being diagnosed, pupils are usually described or labelled as lazy, disorganised, stupid, or even dummies owing to their somewhat inconsistent performance (Anderson and Meier-Hedde 2001). This may lead to serious self-esteem problems, which can be the most debilitating long-term effect of dyslexia (Myer and Ganschow 1988).

However, in 1994, Reid (cited in Mortimore 2008: 57) observed that about 15% of children with specific learning difficulties were not diagnosed until they reached secondary education and that some people go through their whole lives not knowing that they have dyslexia. Nonetheless, there are several ways to identify dyslexia when difficulties arise, such as observations (parent, teacher), self-report questionnaires, screening, and diagnostic interviews.

A helpful guide to this diagnostic approach has been provided by Pollock *et al.* (2004), who claim that when a seemingly able and frequently articulate student experiences three or more of the following conditions, further investigation is necessary:

1. has difficulties with expressing themselves on paper – poor and sometimes bizarre spelling, slow or poorly formed handwriting, untidy presentation;
2. seems resistant to or needs extra time for written work;
3. has unexpected difficulties with reading or maths;
4. frequently seems worried or switched off or lags behind;
5. has difficulties with organisation within time and space;
6. has difficulties with situations that involve memory (bringing the right equipment on the right day, remembering spoken instructions, remembering phone numbers, learning multiplication tables);
7. uses inappropriate behaviour to avoid classroom situations in which dyslexic-type learning difficulties might be revealed in public.

Other warning signs of dyslexia may also concern hearing things more slowly than peers, misunderstanding complicated questions despite knowing the answer, finding the holding of a list of instructions in the memory difficult despite being able to perform all the tasks, and having poor penmanship or pencil grip (having trouble remembering the proper sequence of forming a letter).

To sum up, in a teaching/learning context, dyslexic students may show difficulty in

1. putting thoughts into words (vowels may be left out when writing, and generally, and they may use odd spacing in writing and rarely use punctuation and/or capitalisation;
2. processing at speed; they may have poor concentration (and get tired more quickly than a non-dyslexic person) and a poor sense of direction, i.e. they guess what is left and right and confuse directional words (like before/after, first/last, on/under, yesterday/today);

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3. naming letters or symbols, memorising sequences[7] (such as multiplication tables or the alphabet), dealing with figures (e.g. learning tables), and copying notes from the board.

Although dyslexia is a chronic lifelong condition that cannot be cured, it can certainly be treated (Schulte-Körne 2010), and the type of treatment individuals (should) receive depends on the kind of dyslexia they are experiencing. Indeed, "basic science discoveries in neuroplasticity had led to cognitive training approaches for dyslexia" (Vinogradov 2023, n.p.). In short, "Dyslexia is increasingly being defined, assessed, diagnosed, and treated in the educational system […through] well-established evidence-based practices" (Bowers and Ramsdell 2023: 815; see also Steacy *et al.* 2024; Nurseitova and Shayakhmetova 2023; Kerjean and Peyre 2023).

## *4. Dyslexic students and foreign language teaching/learning*

Learning foreign languages is still considered a stumbling block for dyslexic students (Ranaldi 2003: 14–16) to the point that some colleges and universities waive the foreign language requirement for students with dyslexia. In fact, however, "many at-risk students[8] can benefit from the study of a foreign language in the appropriate learning environment" (IDA n.d.-b), which can be a positive and culturally broadening experience (Peer and Reid 2000). Most experts encourage students to expose themselves to the study of a foreign language of their choice early in their schooling and recommend that students recognise how the study of a foreign language may take extra effort on their part while at the same time providing them with a desirable and necessary experience in linguistic and cultural diversity in our global society (Ganschow and Schneider 2006). According to the British Dyslexia Association (2015),

> While it is acknowledged that some dyslexic children are likely to achieve somehow limited competence in a foreign language, it is important to acknowledge that the opportunity to participate in communicative activities brings additional benefits such as enhanced social development.

### 4.1. Specific learning difficulties

Dyslexia affects language learning according to four main aspects: orthography, patterns, automaticity and motivation. For dyslexic learners, reading and writing difficulties, along with such associated problems as short working memory and problems with automaticity in language, have a strong impact on learning in their native language (Schneider and Crombie 2003: 6–7). When they are introduced to new patterns, sounds and symbols, problems can occur in any

[7] A severely dyslexic child may even have difficulty remembering people, places and the names of objects.
[8] The term "at-risk" describes students who require temporary or ongoing intervention in order to succeed academically, such as those who have difficulties learning a foreign language because of their struggles in a regular foreign language classroom (Ganschow and Sparks 2000, 2006).

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combination and at different levels of severity in three areas of language: phonological/orthographic, syntactic, and semantic.

Although researchers have only started to connect poor phonological skills with dyslexia in the last two decades, for dyslexic students, all skills required to develop a foreign language can be highly influenced by their weaknesses in linguistic coding skills (Schneider and Crombie 2003: 5) and by "weak phonemic awareness", which entails greater difficulties with distinguishing the individual sounds, or phonemes, of a language (Elbro and Arnbak 1996).

Additionally, the differences between one's native language and the foreign language of study can pose problems. When learning a foreign language, its orthographic depth, i.e. the degree of complexity with which a phoneme is transcribed into a writing system, is extremely relevant, as is its granularity, that is, how many letters are needed to transcribe one sound. Needless to say, one-to-one correspondence is preferable. This is the case with Italian, which has a shallow orthography, where each letter stands for a distinct sound, and the vowel sounds are pronounced consistently with how they are spelled.[9] In contrast, the 26 letters of the English alphabet represent 44 phonemes and 577 grapheme-to-phoneme correspondences that must be recognised during the reading process (Selikowitz 1993).[10]

Concisely, the sounds of English could be confusing for Italian students because they are not part of the Italian language. More specifically, with regard to phonetic interference, as outlined by Weinreich (1968: 18–21), three different phenomena may be at work: the under-differentiation of phonemes, the over-differentiation of phonemes and the reinterpretation of particular elements. Therefore, when learning English, dyslexic Italian students may fail to distinguish short and long vowels (under-differentiation of phonemes), impose specific elements of Italian on English (over-differentiation of phonemes)[11], or give excessive relevance to particular elements of Italian despite being superfluous in English.[12]

Dyslexic students' difficulty with automaticity and working memory is closely connected to learning sounds and their retention (Baddeley and Hitch 1974).[13] The challenge for learners with dyslexia is to hold sounds in their

[9] Compare, for instance, the English and Italian words for "race". While *gara* reads exactly as the suite of (g = /g/) + (a = /a/) + (r = /r/) + (a = /a/) as /'ga:ra/, its English equivalent "race" reads as /reɪs/.

[10] British English is said to have 12 vowels, although there are great variations in accents. Consider also the schwa (/ə/), the most common vowel sound appearing roughly once every three vowel sounds in English. The sound is found only in unstressed positions in English. Unstressed vowels and syllables are usually said faster and at a lower volume than stressed words or syllables. As a result, the vowel sound in an unstressed word or syllable can lose its purity.

[11] This is the case, for instance, with the gn sound /ɲ/, which does not exist in English, and therefore dyslexic students generally read the word "sign" as /saiɲ/ instead of /saɪn/.

[12] This happens, for instance, when Italian students reduplicate consonants in English because of gemination, so the word "ball" /bɔ:l/ is pronounced incorrectly as /bəʊl/.

[13] The most popular model of working memory is the multicomponent model proposed by Baddeley and Hitch (1974), in which the main component is the central executive, responsible for the control of executive processes, including actions; the direction of attention to relevant information and the suppression of irrelevant information and undesired actions; the supervision of information integration; and the coordination of multiple cognitive processes to be executed in parallel. The phonological loop permits the retention of auditory information, such as a (short)list of words or numbers, as long as they are continuously repeated. The visuospatial

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working memory long enough to manipulate them. These operations are further complicated if the data is presented in a written format, leading to more toing and froing of information between the phonological store and the articulatory control process. As a consequence, many people with dyslexia like to read aloud to better cope with such complex operations. Taking recourse to spatial and visual support may also facilitate the recall of information from the visual-spatial store, thus alleviating the burden on the phonological loop. Mapping and colour may therefore provide very useful resources.

Another hardship experienced by students with dyslexia in language learning concerns identifying the recurrence of patterns in a language. A learner with dyslexia may not immediately spot the repetition of certain sequences in words, i.e. morphemes. English, in particular, has a complex morphology that allows for numerous additions of words or parts of words. Therefore, students may have to break down long, multisyllabic words into their parts to determine meaning or add one or more affixes to produce grammatically and semantically meaningful information.

Dyslexic learners may also struggle with identifying grammatical functions for words or groups of words like verbs, subjects and objects and with how words pattern at a sentence level. As a consequence, when writing, they will generally favour short, declarative sentences and avoid transformations such as questions and passive forms.

## *5. What can be done?*

The assimilation of a new language system for dyslexic students needs to be planned by means of focused teaching in order to prevent anxiety and failure since their language-processing abilities may encounter continuous obstacles which hinder their learning process and endanger their wellbeing (Rolak *et al.* 2023; Wilmot *et al.* 2023). Much repetition and practice are needed to overcome those challenges. Sensitised teachers will encourage this overlearning and recommend extra resources with which a learner with dyslexia can work.

Nonetheless, even though there is a plethora of literature about dyslexia, there is still not enough literature on the methodology of teaching foreign languages to students with dyslexia. On the one hand, teachers are expected to accommodate their teaching, students' requirements and examination conditions to individual needs, even though they are not systematically trained to identify specific learning needs, to work with dyslexic students, to accommodate their teaching or to develop adequate techniques and strategies. On the other hand, learners often locate their own resources, such as in local libraries and on the

sketchpad, which permits visual and spatial information (creating and navigating mental maps, forming mental images) to be maintained and manipulated, is constituted of two subsystems: one for visual information and another for spatial information. The episodic buffer temporarily integrates phonological, visual, and spatial information, and possibly other forms of information (e.g. semantic/musical information) in a unitary, episodic representation. In this way, it provides an interface between the subsystems of working memory and the part of long-term memory specialised for episodic memory (Tulving 1972) (i.e. recollection of specific events that integrate time, place and emotions) (Pezzulo 2007: 2).

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internet, through personal initiative. A supportive network can also contribute suggestions and encourage the learner to sustain their efforts.

First of all, teachers should find out the particular weaknesses that a student has and help them recognise these, but at the same time, the student should be encouraged with praise and understanding in order to avoid loss of motivation. Reid (2011: 77) suggests that "one of the main ways of ensuring success for dyslexic pupils is to provide a range of means whereby they can demonstrate their competence. This may not necessarily be through writing, and it is important that other means of displaying competence should be provided". Dyslexic college students[14], for example, may successfully learn through investigation in groups, worksheet activities, completing tables, multiple choice or matching tasks, journal writing, fieldwork and enquiring, making posters, learning in pairs, brainstorming, oral presentations and debating, tape-recording, self-assessment, videoing and computer work.[15] These activities are usually very good for dyslexic learners as they involve active participation and do not necessarily require vast amounts of reading (Reid and Green 2008).

In particular, assistive technology enables the promotion of independence and overcoming barriers due to difficulties in processing a linear order, reading, attention, organisation, memory, and the physical demands of tasks related to the coursework. Many special aids to enhance learning are already available, and more are being developed, including as freeware (Nuttall and Nuttall 2013). Assistive hardware and software include reading pens with various scanning capabilities, such as enlarging the font to make text easier to read or text-to-speech/sound software.

Dyslexics learn better by doing than by reading, which is why dyslexic learners succeed better in an immersion environment, such as living in a foreign country or watching foreign-language films and videos. Incidentally, the multi-sensory approach has been proven to work well in teaching languages to non-dyslexic learners; hence, it is possible to implement an inclusive way of teaching that does not marginalise SNSs in the educational context.

Mind maps, where each main idea goes in a bubble with supporting details in smaller bubbles surrounding it, make it easier for dyslexic learners to structure assignments and presentations in a visual manner. Michalko (quoted in Buzan 2012: 3) describes a mind map as "the whole-brain alternative to linear thinking. [It] reaches out in all directions and catches thoughts from any angle". By using

[14] Dyslexic elementary and high school students can also benefit considerably from quizzes and competitions, worksheet activities, drama and role-play, cartoons and comic strips, and songs and poems. A few key instructions/suggestions for teachers who have a dyslexic learner might include the following: learn everything you can about dyslexia and share everything you know about dyslexia with the child's parents; consider inviting a visitor with dyslexia into the classroom (or discuss the success of some famous dyslexics); help other students understand dyslexia (to help prevent bullying); and, if possible, have a classmate who can sit next to the dyslexic learner and help them. However, it is vital to keep dyslexic learners' struggles private, so, in order to avoid humiliating them, teachers should not ask them to read out loud in class, make them participate in spelling bees, write homework answers on the board (as spelling/handwriting issues will become patent to the whole classroom), and so on (Embracing Dyslexia 2013).

[15] Schneider and Crombie (2003: 17) stress the importance of metacognition and suggest making language learning a "discovery learning" process in which students turn into "language detectives".

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images, colours, lines, shapes and different symbols that help to visualise, connect, structure and classify thoughts and graphics to flowchart ideas, mind maps can make use of smaller amounts of written text and provide an audio approach to comprehending/remembering information. With a natural structure that radiates from the centre, mind maps break down complex data into pieces that can be organised into branches and sub-branches to simplify the understanding of information, thus transforming monotonous details into catchy and extremely structured graphs that act in line with the brain's natural way of thinking (90% of the information transmitted to the brain is visual). Their beneficial uses for dyslexic students range from brainstorming and illustrating concepts to structuring thoughts and planning activities visually, from improving note-taking during classes to eliminating the stress associated with the repeated reproduction of information and better organising their thoughts before writing them down.

Using colours or symbols together with things' names can help dyslexic students work more quickly and effectively, as reading letters might be substituted by "reading" colours or symbols. Colour coding for corrections should also be provided, as it can help learners grasp grammatical structures and functions better (in turn helping textual comprehension), whereas abstract linguistic terms should be avoided (Kormos and Smith 2013). If a kind of colour coding is followed consistently, students will soon learn that words in green express the agents of actions, red stands for the action itself, and blue represents the object of the action, as in Figure 4.


***Figure 4.*** "Mum is cooking spaghetti" (adapted from Cimermanová 2015: 52)

In sum, using colours and schemas might be an effective way to visualise grammar that is otherwise abstract.

Similarly, teaching vocabulary is most effective when it is taught explicitly. Since dyslexic students generally have a short-term working memory, they need a lot of repetition to build automaticity and should not be asked to acquire new words implicitly. When they learn lists of words, they usually remember the first and last words. Statistics show that after one hour, students forget 50% of what they have learnt; after nine hours, they forget 60%, and after a month, they forget 80% (Homolová cited in Cimermanová 2015). Therefore, "[n]ew vocabulary taught in one session needs to be revised repeatedly on at least three to four consecutive occasions" (Kormos and Smith 2012: 132).

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Pressley (cited in Schneider and Crombie 2003: 69) suggests avoiding gap-filling activities and incorrect choices whenever possible for dyslexic students as, even in their native language, these students rely heavily on context clues. Schneider and Crombie also point out that "matching activities may be difficult and unfair, because their poor visual perceptual short-term memory is over-challenged by the specific eye-movement task required to match the combined word or sentence parts" (Schneider and Crombie 2003: 69, emphasis in original).

## *6. Assessing students*

When it comes to testing dyslexic students, teachers should make sure an assignment's instructions are clear and appropriate, meet a particular student's needs, and are well understood. Accordingly, instructions should be provided in small steps and read out loud, and a large and well-spaced font should be used when writing them on the board. Technical devices and supplementary materials/aids should be allowed, including (illustrated) dictionaries, additional papers for experimentations with spelling, brainstorming, pens with erasable ink or pencils, etc., and, when necessary, the timing should be extended. Essays and written tests should be graded on content, and the spelling should be ignored and not marked. Instead of written tests, students could also be allowed to do oral tests, provided they are allowed enough time to process the question/task before answering and not forced into immediate responses. Furthermore, classroom accommodations are essential for dyslexic students, and different contexts can either demotivate them or facilitate their memorisation/learning: a calm and quiet environment should be provided for tests, and some students may even need a private room. Generally, students should be graded on interaction and based on schoolwork rather than just tests. This set of strategies and resources aims at enhancing their wellbeing in their educational setting.

## *7. Concluding remarks*

Directing people with dyslexia away from language learning solely on the basis of their dyslexia is scientifically unfounded. Learning (English as) a foreign language can be a great opportunity for dyslexic learners from both a scholastic and a psychological point of view, provided that specific and gradual activities are planned. "True inclusion in the modern languages classroom is about much more than having a presence and being exposed to another language. It is about feeling accepted and involved in a worthwhile learning experience whatever the level that can be achieved" (Reid 2005: 12). Nonetheless, learning styles that work well for the dyslexic learner and ways to increase self-confidence must be identified, and foreign language departments in particular may need to demonstrate flexibility in setting criteria for foreign language study in school or other academic settings (Schneider and Crombie 2003). Yet most obstacles can be overcome with targeted pedagogical interventions, regular work and reviewing, and appropriate accommodations. In any case, teachers should

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provide direct, explicit instruction on language structure and extra time to master the subject matter (Sparks and Miller 2000).

In some cases, implementing curriculum schedules that allow for slowing the pace of foreign language content instruction and/or an alternative foreign language instructional programme is advisable. These accommodations cost no money and do not "require changing the curriculum. They just require an awareness by the teacher that these are necessary" (Embracing Dyslexia 2013). Multi-sensory methods, mind mapping in particular, can significantly improve structure learning and may also be useful for non-dyslexic students to varying extents. Though some extra time and support should be provided to SNSs, their academic wellbeing passes beyond their functional inclusion in the mainstream teaching and learning activities; hence, sharable activities must be promoted. The promotion of specific teacher training is equally important since teachers and lecturers at university level could experience discomfort in dealing with learning needs they are neither well-informed about nor trained in addressing.

This paper has sought to highlight the salient aspects of these difficulties and possible coping strategies in order to raise awareness about such a challenging teaching/learning context. Indeed, academic wellbeing can only be achieved through a fine-tuned, synergistic attitude that incorporates a conscious approach to these special needs and specific training.

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