Tesi di Laurea

Finding a way out of a vicious circle: analysis of a possible correlation between academic success, emotions and reading effectiveness in college students with SLDs.

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Abstract

In current research on the various aspects of reading, adult readers (and adult readers with specific learning disorders) have rarely been taken into consideration. Furthermore, traditional Italian diagnostic tests assess reading skills by separating the decoding ability from text comprehension, while there are different tests in the United Kingdom that integrate the reading speed parameter with that of comprehension. The SuperReading couse has introduced the parameter of reading effectiveness, which unites decoding abilty and comprehension into a single item.

Given the new parameter introduced by the SuperReading course and the focus of the present literature on reading ability in childhood rather than adulthood, the present study aims to investigate the relation between reading effectiveness (intended as the union of decoding ability and comprehension) and emotional aspects, and between academic success and emotional aspects.

The study population includes 20 college students diagnosed with specific learning disorders. Participants took a reading test in which the reading effectiveness parameter was assessed; they were then given a questionnaire on emotional aspects in which several parameters were investigated: academic success, self-concept, self-efficacy, self-assessment of soft skills, test anxiety, and strategic inconsistency related to the learning strategies they used. The results were then analyzed to find an answer to the research question: do emotional aspects influence academic success and reading effectiveness?

Acknowledging the importance of emotional components in learning, and providing tools for students (both with and without specific learning disabilities) to learn how to manage their emotions, could be a first step in helping these students, future adults and citizens, but most of all *human beings*, not only to better fit into the school system but also to increase their self-efficacy and their abilities.

Abstract

Nelle attuali ricerche sui vari aspetti della lettura, i lettori adulti (e i lettori adulti con disturbi specifici dell'apprendimento) sono stati raramente presi in considerazione. Inoltre, i tradizionali test diagnostici italiani valutano le abilità di lettura separando l'abilità di decodifica dalla comprensione del testo, mentre nel Regno Unito esistono diversi test che integrano il parametro della velocità di lettura con quello della comprensione. Il corso SuperReading ha introdotto il parametro dell'efficacia di lettura, il quale integra l'abilità di decodifica e la comprensione.

Considerando il nuovo parametro introdotto dal corso SuperReading, e il focus della letteratura attuale sull'abilità di lettura nell'infanzia piuttosto che nell'età adulta, il presente studio si propone di indagare la relazione tra l'efficacia di lettura (intesa come unione dell'abilità di decodifica e comprensione) e gli aspetti emotivi, e tra il successo scolastico e gli aspetti emotivi.

La popolazione di studio include 20 studenti universitari con diagnosi di disturbi specifici dell'apprendimento. I partecipanti hanno sostenuto un test di lettura in cui è stato valutato il parametro dell'efficacia di lettura; sono stati poi somministrati loro dei questionari sugli aspetti emotivi in cui sono stati indagati diversi parametri: successo accademico, concetto di sé, autoefficacia, autovalutazione delle proprie capacità trasversali, ansia da esame e incoerenza strategica relativa alle strategie di apprendimento utilizzate. In seguito sono stati analizzati i risultati per trovare una risposta alla domanda di ricerca: gli aspetti emotivi influenzano il successo accademico e l'efficacia di lettura?

Riconoscere l'importanza delle componenti emotive nell'apprendimento e fornire strumenti agli studenti (sia con che senza disturbi specifici dell'apprendimento) per imparare a gestire le proprie emozioni potrebbe essere un primo passo per aiutare questi studenti, futuri adulti e cittadini, ma soprattutto *persone*, non solo a inserirsi meglio nel sistema scolastico, ma anche ad aumentare la propria autoefficacia e le proprie capacità.

Introduction

Reading is a very complex skill that involves various cognitive and emotional processes (Boden & Giaschi, 2007; Geiger et al., 2008), including language skills, visuoperceptual skills, working memory, attention, metacognition, learning motivation, and attitude toward study (Rapp, van den Broek, 2005; Keenan, et al., 2008). All these aspects are crucial, and children who manifest deficiencies in these components often continue to have difficulties also when they become adult. Learning disorders are among the most frequently diagnosed developmental disorders in childhood, to the point that epidemiological studies report comparable prevalence rates of 4–9% for deficits in reading and 3–7% for deficits in mathematics (DSM-5). Not only children and adolescents with SLDSs seem to be more prone to experience higher levels of anxiety and depression, but this condition of suffering that children and adolescents with SLDs live seems to follow them into adulthood. Indeed, living in a society that associates educational and occupational success with literacy often makes life emotionally challenging for adults with dyslexia and SLDs (McNulty, 2003). In fact, they are often subject to negative perceptions, stereotypes, misunderstandings, and discrimination both by peers and teachers (Denhart, 2008).

In current research on the various aspects of reading, adult readers have rarely been taken into consideration. To date there seem to be a great deal of research on the development of reading comprehension skills in childhood, but there is still a lack of similarly extensive research for adulthood. Furthermore, there are few studies documenting changes in reading in adult subjects with dyslexia in the Italian context (Lami et al., 2008). research on reading aloud shows that even in adulthood reading speed and accuracy are lower. Moreover, subjects have difficulties In reading words aloud (Bruck, 1992), in taking notes, writing essays, reviewing study material, understanding complex and lengthy texts (Gilroy & Miles, 1996; Riddick et al., 1997; Singleton, 1999), difficulties in tests of vocabulary, listening comprehension (Gottardo et al., 1997), and in both spelling and writing (Shaywitz et al., 1999; Hatcher et al., 2002). There seem to be also secondary effects such as lack of confidence, low self-esteem, high level of frustration (Riddick, 1996), and difficulties in verbal long-term memory (Swanson & Hsie, 2009). It is also worth mentioning that traditional Italian

diagnostic tests tend to assess reading skills by separating the *decoding* component (assessed through read aloud tests) from the text *comprehension* component, while there are different tests in English that tend to integrate the reading speed parameter with that of comprehension (Scagnelli et al., 2019). Finally, the increased focus on reading aloud has led to neglecting silent reading, which represents the preferred mode from the end of primary school onwards (Fuchs et al., 2001).

The SuperReading course, in addition to seeking to make an improvement in reading skills, introduces a new parameter, reading effectiveness (RE), that combines speed and comprehension, and implies a reading mode that is more typical of adulthood. This parameter allows to better examine the quality of the performance because it is possible to see what happens in every step of the test (the first reading and the review in the second reading) and it also takes into account the time readers employ. In this way, it is also possible to identify any weakness the reader might have, and work on it to make the reader improve. For example, if comprehension scores are high, but the subject uses an excessive amount of time to answer the questions accurately, there might be the need to work on reading speed; on the other hand, if the subject shows low comprehension scores but the reading took her/him very little time, then it is comprehension that should be enhanced. Assessing only comprehension results without taking time into account does not allow to ascertain the subject's real reading skills. Considering reading effectiveness, the present study aims to try to find an answer to two fundamental questions: do emotional skills interfere with academic success? Is there a correlation between emotions and the score students get on reading effectiveness? To answer these questions, we will investigate the participants' emotional states when facing an exam, their self-efficacy, their general self-concept, their self-assessment of their soft skills, their academic success and the study strategies they tend to consider more/less useful, and those they use more/less. Later, it will be investigated a possible correlation between academic success, reading effectiveness and emotional states.

The thesis is divided into four chapters: the first chapter introduces the concept of dyslexia and that of specific learning disorders, also briefly mentioning Italian legislation that protect people with SLDs. The second chapter offers a review of the most recent literature regarding emotional components in students with SLDs and in dyslexic students. In the third chapter the parameter of reading effectiveness will be

explored, together reading comprehension and the main cognitive processes involved in reading, and finally the superReading course will be briefly presented to introduce the parameter of reading effectiveness. The last chapteris dedicated to the study carried out on a group of 20 undergraduate students with a diagnosis of SLD. It will be explained which measures have been taken into consideration and analyzed, how the tests on reading and emotional states and self-concept were conducted, and which results emerged from the research.

Chapter I – Specific Learning Disorders and Dyslexia

1.1 Current definition of Dyslexia

The word dyslexia has Greek origin: the prefix *dys-* means "bad, abnormal, difficult", and *lexis* means "word" (Roitsch & Watson, 2019). Dyslexia is a relatively young condition because it was only in the last century that it first appeared in the medical field due to James Hinshelwood, an English eye surgeon who, at the turn of the late 19th century, first analyzed a large series of cases of acquired dyslexia and later a series of cases with developmental disorders. Previously, everyone considered this disability as attributable to the sphere of language understood in terms of inability to produce language or related to mental retardation. Hinshelwood's proposal likens the developmental disorder in type (though not in severity) to that exhibited by patients with pure *alexia* (or *optic aphasia*, a neuropsychological disorder of the sensory sphere which consists in the loss of the cognitive skills that enable reading and is related to a lesion of the brain centers imputed to the corresponding grapheme-concept association) without *agraphia* (form of sensory aphasia in which the ability to formulate thought in writing, or to translate phonemes into graphic signs, is lost) or *word blindness*. During the 20th century, however, the idea of a visual basis for developmental disorder has been gradually set aside in favor of hyphotesis that emphasize the disruption of central phonological and/or lexical processes (Zoccolotti, 2013). It is estimated that about 15 % of public school children require special instruction in reading; about half may have persistent reading difficulties. Dyslexia affects boys more than girls, although gender is not considered a risk factor for developing dyslexia.

Dyslexia can be either developmental or acquired. Developmental dyslexia can be diagnosed in both children and adults and is currently considered a reading disorder that derives from a failed development of one or more of the components that make a reader proficient. By contrast, in acquired dyslexia the subject has all the components that make her or him a proficient reader, but, as a result of brain damage, such as stroke or head trauma, reading functions are impaired (Friedmann & Coltheart, 2018).

The exact nature and definition of dyslexia has puzzled educators, parents, and dyslexics themselves for years. Still today, dyslexia is considered a learning disability

with much controversy and many questions surrounding its definition, identification procedures, and educational implications. (Zambo, 2004) It has been studied as a neurological problem (Orton, 1937), a visual processing difficulty (Stein, Talcott, & Walsh, 2000), and a linguistic coding deficit (Shaywitz, 2003). Some researchers approach dyslexia as a visual impairment in the form of a magnocellular-deficit and believe that the eyes of individuals with dyslexia hold visual images of letters longer than usual so subsequent images become superimposed on one another (Stein, Talcott, & Walsh, 2000). Recently, developmental dyslexia has been defined as "a hereditary temporal processing defect, associated with impaired magnocellular neuronal development (magnocellular neurones are a specialised set of large neurones found throughout the brain), that impacts selectively on the ability to learn to read, leaving oral and non-verbal reasoning powers intact" (Stein, 2018, pp. 4, 9).

Developmental dyslexia is a condition present in individuals who have word-level difficulties in reading decoding and spelling; the most persistent problem seems to be spelling (Berninger et al., 2008; CNRS, 2017). It is internationally considered a neurobiological, developmental, language-based learning disability that concerns individuals' ability to learn, to read (accuracy and fluency) and the development of spelling skills. In fact, individuals with dyslexia have difficulty connecting spoken language and the written word because they have deficits in the phonological component of language (Roitsch & Watson, 2019). Although research on the neurobiological bases has not found an unambiguous cause, there is agreement on the prevalent genetic-constitutional origin that determines small but significant anomalies in the brain sites involved in the organisation of the linguistic-cognitive functions of reading. At the same time, it is important to emphasise that the expressiveness of the disorder of a neurobiological nature is mediated and modulated by environmental factors insofar as the latter may favour or hinder the acquisition of a skill that generally takes only a few months for Italian-speaking children (Stella, 2010).

The difficulty in decoding words accurately and fluently can affect reading comprehension and vocabulary development (Kim et al., 2012; Snowling, 2019). When a student with dyslexia begins to learn to read, s/he usually encounters difficulty at the phoneme or sound level. These difficulties adversely impact spelling and reading. Secondary consequences may include problems in reading comprehension and reduced

reading experience that can impede growth of vocabulary and background knowledge (International Dyslexia Association, 2019). Children with problems in phonological processes often present difficulties in making up sounds, segmenting words, identifying the positions of sounds within words, and dividing words into pronounceable elements. They may reverse the order of sounds in words. Delaying or hesitating in word choice, word substitution, or naming letters or pictures are often early signs of dyslexia. Disorders of auditory short-term memory and auditory series are common (MSD Manual).

1.2 Possible causes of dyslexia

There are four main theoretical models that attempt to explain the possible causes of dyslexia: the phonological deficit theory, the automation deficit theory (cerebellar), the visual/auditory deficit theory (magnocellular), and the attentional deficit theory (Stella, 2010). According to the *phonological deficit theory* at the root of the reading disorder there is an impairment at the phonological level (Catts, 1989). The individual, therefore, has difficulty in encoding phonological information, that is, in creating a representation of it, difficulty in keeping this information in working memory and at the same time would show difficulty in retrieving the phonological information itself and finally s/he would be unaware of the phonological structure of words. This deficit can be recognized from the difficulty in reading of non-words, i.e. words that do not exist and therefore are not present in the reader's lexicon, who must therefore construct through an assembly strategy based on the efficiency of the phonological components. The difficulty in reading non-words is a characteristic that is also found in dyslexic adults (Stella, 2010).

The *automation deficit hypothesis* and its relationship to abnormalities in cerebellar function have been systematically investigated by Nicolson and Fawcett (1990, 1994, 1999) and their collaborators (Nicolson et al., 1995; Nicolson et al., *Developmental dyslexia: the cerebellar deficit hypothesis*, 2001; Nicolson et al., *Dyslexia, development and the cerebellum*, 2001). A central aspect of this theory is that the automation deficit would be determined by a basic cerebellar dysfunction that would impair the automation of more general skills, not only of reading, but also of motor sequences and implicit

learning in general. Moreover, this hypothesis tries to explain the evident difficulties found in dyslexics in performing two tasks at the same time: for instance, writing and listening to the next segment of dictation at the same time, but also decoding and comprehension, or performing certain activities under precarious postural control. This hypothesis makes it possible to account for the variety of comorbidities that the reading deficit presents, for example with that of motor coordination and with that of attention-hyperactivity (Stella, 2010).

The *visual deficit hypothesis* concerns the function of the magno-cellular system that is deputed to process information transient, i.e. rapidly changing information, both visual and auditory. The deficit of the magnocellular system would cause a kind of overlapping of stimuli, both visual and auditory, or in any case the difficulty in maintaining sequences correctly (as happens with 'the' being read as 'there'). Research in this area has not led to any definitive conclusions, but has nevertheless taken into consideration the visual components in reading, components that are very relevant given that the reading process is initiated through visual analysis, which in any case accompanies all stages. In previous years, studies on visual aspects had been limited to convergence and binocular co-ordination, whereas with research on the magnocellular hypothesis the study shifted to the neural components of visual processes (Stella, 2010).

The *hypothesis of an attentional deficit* underlying dyslexia is closely linked to the hypothesis of a temporal deficit in the processing of visual and auditory stimuli, but at the same time the role played by attentional, automatic and voluntary processes has its own autonomy with respect to the specific modal mechanisms of stimulus processing. The attentional theory has developed a body of empirical research, and possible processing mechanisms, such as the concept of *attentional window*, i.e. both a visual and temporal space in which the processing of information takes place, that confers to the theory itself a distinct conceptual autonomy. In reading, this space is partly symmetrical with respect to the focal point, partly asymmetrical with enlargement towards the right in reading systems in which one proceeds from left to right, but it is asymmetrical in the opposite direction in systems in which one reads from right to left. Many studies (Facoetti et al., 2006) have shown irregularities of the attentional window in dyslexic persons (Stella, 2010).

According to the Italian Society of Neuropsychiatry of Childhood and Adolescence, the diagnosis of dyslexia cannot be made before the end of grade II elementary school. However, as early as in I grade, several indicators of important discrepancies between general cognitive skills and learning to read and writing can be detected (Stella, 1999). The essential parameters for the diagnosis of dyslexia, in transparent writing systems such as the Italian language, are speed and correctness. The former is measured as the time taken to read passages, words or syllables, while the latter is measured as the number of reading and writing errors that deviate by at least two standard deviations from the performance of readers of the same age or are two years younger than the chronological age. Text comprehension does not contribute to the diagnosis of dyslexia, although it provides useful information on reader efficiency (Cornoldi, 1991; Ferraboschi & Meini, 1993; Stella, 1996; Tressoldi & Vio, 1996).

1.3 Cognitive Styles

"*I am **not** someone **with** dyslexia. I **am** dyslexic. Were I not dyslexic, I would **not** be me.*"

<div align="right">Ross Cooper (2009)</div>

Dyslexia is a label that results from how people process information. Dyslexia is fundamental to who these people are, therefore in seeking to identify fundamental core differences between those who are labelled as dyslexic and those who are not, it is crucial to analyze how people with dyslexia process information, and to recognize that it is also a matter of identity politics.

Cognitive style is the mode of information processing that the person predominantly adopts, which persists over time and generalizes to different tasks (Boscolo, 1981). It is the individual's preferred mode of thinking, i.e., a propensity to analyze reality according to the criteria deemed most functional and comfortable (Sternberg, 1998). Cognitive styles adapt in response to the individual's perception of the nature of the information to be processed (in a similar way that individuals may choose to use their less preferred hand

in particular circumstances). A number of dyslexic theorists have argued that a strong preference for visual thinking is an intrinsic element of being dyslexic (West, 1991, Davies, 1994, Cooper, 2006a). Furthermore, they argued that visual thinking intrinsically affords typical dyslexic creative strengths as well as typical sequential 'weaknesses'. Cooper's research explored how individuals problem-solve by providing problems to be solved and then asking how individuals attempted their solutions (Cooper, 1997). When preferences for visual or verbal approaches were described, the individuals were then asked to attempt solutions using the different approach (visual for verbal, or verbal for visual) to gauge the strength of their preference. People identified as dyslexic are almost 7 times more likely to have a clear preference for thinking visually (they think visually and never verbally), compared to non-dyslexic people (Cooper, 2006a); the sub-group with this extreme preference is almost one third of the dyslexic group. Overall, 80% of those diagnosed as dyslexic prefer to think visually (compared to 65% of the non-dyslexic group). It is therefore clear that visual thinking is surprisingly common and not a defining characteristic of being dyslexic, but dyslexic people are far more likely to have a strong preference for visual rather than verbal thinking. It should also be noted that where the preference is extreme, they cannot use alternative ways of thinking.

Thinking visually or verbally have specific advantages and disadvantages. Thinking verbally, for example is an advantage when being analytical, critical and logical. It lends itself to abstractions, deduction and attention to detail. In contrast, visual thinking is much faster, and lends itself to lateral thinking, inductive logic, overviews and being imaginative. It is advantageous when thinking symbolically, analysing patterns and inter-relationships (Cooper, 1997). In short, verbal thinking is an advantage when dealing with sequences, and visual thinking is an advantage when processing information holistically. However, it is possible to use verbal thinking holistically (such as in poetry and verbal imagery) and visual thinking sequentially (such as in storyboards).

1.4 What is a learning disability?

The term learning disability (LD) is traditionally synonymous with the concept of *unexpected underachievement* — specifically, students who do not listen, speak, read or write, or develop mathematics skills commensurate with their potential, even though there has been adequate opportunity to learn. Unexpected underachievement has been attributed to intrinsic neurobiological factors that indicate that students with LD will require specialized instruction to achieve expected levels based upon some index of aptitude, usually IQ test scores (Lyon et al., 2001).

The concept of unexpected underachievement has been in medical and psychological literature since mid-19th century under the rubrics of dyslexia, word blindeness, dysgraphia, dyscalculia, and other terms. However, as reported by Hammill et al. (1981) it has been only since 1962, when Samuel Kirk, psychologist at the University of the Illinois, coined the expression *learning disabilities*, that the concept of unexpected underachievement finally acquired formal recognition in the education community. Kirk used the term to refer to a variety of syndromes involving language, learning, and communication. He believed that LD reflected unanticipated learning problems in a seemingly capable child. Writing in 1962, Kirk defined LD as "a retardation, disorder, or delayed development in one or more of the processes of speech, language, reading, spelling, writing, or arithmetic resulting from a possible cerebral dysfunction and not from mental retardation, sensory deprivation, or cultural or instructional factors." In 1963 Kirk further noted that LD represented a discrepancy between a child's achievement and his or her apparent capacity to learn. As in the current definition, Kirk grasped that LD represented an amalgam of disabilities, all grouped under a single label, and that the term was not synonymous with reading disabilties (RD). Rather, RD was the most frequently identified type of LD in Kirk's days, as it still is today. In the 1960s and 1970s, the term learning disability gained acceptance. Before the 1960s, professionals who wanted to refer to the cluster of disorders later known as learning disabilities used such terms as 'minimal brain dysfunction/injury', 'psychoneurological learning disorders', 'dyslexia', or 'perceptual handicap' (Hammill et al., 1981).

The terms *diversity*, or *individual variation*, or *characteristic* are crucial to discuss as they regards a widespread way of thinking, linked to the term *disability*, that may be found

also in the school community: when we talk about SLDs (specific learning disorders), or learning difficulties, are we dealing with something identifiable as different from the norm, something pathological, which deserves specific measures and considerations, or are we dealing with conditions that can be regarded as expressions of the norm and that depend on poor practice? The school community tends to distinguish with a clear-cut boundary normality from pathology and to attribute only to conditions defined as pathological the possibility of making use of rehabilitation and compensatory aids or tools. Even in the medical sciences, there are many conditions in which it is difficult to clearly distinguish between normality and pathology, since the distribution of characteristics among individuals rather takes the form of a continuum. Researchers, on the basis of specific criteria, tend to identify a point (called *threshold*) above or below which an individual's characteristics take on a 'deviant' significance, i.e. clearly discrepant from the majority of individuals. This applies to height or weight and also to reading and writing skills (Stella, 2010).

Dyslexia is one of a number of 'conditions' that come under the umbrella term 'neurodiversity. Others include dyspraxia, AD(H)D, Dyscalculia and Aspergers. Each of these 'specific learning difficulties' have come to have reasonably well defined characteristics, although academics still argue over the precise boundaries. For example, few would disagree that dyslexia is characterised by difficulties with the perception of the sequence of rapidly changing sounds (or phonemes) in speech and associated difficulties with phonics, sequencing, and organisation. Others would argue that difficulties with the perception of sequences of visual text are also characteristic, while some argue that this should be attributed to 'dyspraxia'. The attempt to define the behavioural characteristic of each of these 'conditions' gives the appearance that they are real conditions that are separate from each other, possibly with unique 'causes', although there remains no agreement, despite 120 years of research, about what causes the underlying sequential difficulties (Rice and Brookes, 2004). What is now known is that there is a significant overlap between these 'conditions'. If you get a 'diagnosis' of one, you have a greater than 50% chance of being 'diagnosed' with another (Gilger and Kaplan, 2001). For example, 50% of those diagnosed as AD(H)D are also diagnosed as dyslexic, an overlapping 50% are diagnosed as dyspraxic. 26% are diagnosed as having Aspergers. Similarly, 50% of those diagnosed as dyspraxic are also diagnosed as dyslexic (Colley,

2009). Cooper have suggested that the connection between these 'conditions' has not been recognised because each of them are considered the domain of different academic or medical professionals. However, when considered altogether, it becomes apparent that all 'specific learning difficulties' have two things in common: working memory difficulties and a strong preference to make meaning holistically (Cooper, 2006).

Working memory difficulties are a measurable difficulty with retaining intrinsically meaningless information (such as a sequence of random numbers) while working on something else (that may be related- such as reproducing the numbers backwards). This difficulty can explain a wide range of 'specific learning difficulties' such as holding on to arbitrary information including letters and sounds, the sequence of muscle movement, the sequence of mathematical processes, and multiple instructions.. Schools tend to teach arbitrary information through rote and sets of socially constructed 'rules'. However, it is difficult to remember what these rules are, and use them in the context of doing something else (such as writing). Making meaning holistically depends on recognising (and often playing with) patterns in information. It's about seeing the connections that render information meaningful. This requires imagination and making intuitive connections (by feel). It requires very little working memory. In contrast, making meaning sequentially requires working memory while you work through a sequence of information (that is usually structured either chronologically, or by virtue of perceived cause and effect). It depends little on imagination. In other words, the apparent working memory deficit is simply a by-product of a strong preference for making meaning holistically (Cooper, 2006).

1.4.1 Neurodiversity and Neurotipicality

In recent years, the term *neurodiversity*, or *neurodivergence*, has emerged to indicate when a person's brain processes, learns and/or behaves differently from what is usually considered "typical". The term was coined by sociologist Judy Singer in 1999; as someone with 'Aspergers', she argued that her 'condition' is not a 'deficit' to be 'corrected', but rather it is a normal expression of human diversity. This conceptual

framework is echoed by John Stein (2001) when he argued that if dyslexia did not have evolutionary advantages, it would have died out through natural selection (Cooper, 2006). The term *neurodiversity* argues that people are entitled to be different and learn differently. It was coined in outraged response to eugenic plans which assumed that if we cannot cure 'autism' then we could prevent it through genetic screening of foetuses. In other words some medical professional or academic felt entitled to assume that this difference was 'deficit', and from that render the person unworthy of life. Recognising that a number of specific learning difficulties tend to overlap the neurodiversity perspective talks of 'overlapping conditions', in contrast to the deficit focused medical model which uses the term of 'comorbidity' (Cooper, 2009).

It is often assumed that most people are 'neurotypical' while a minority are 'neurodiverse', and it is sometimes argued that some brains are sufficiently different from the 'norm' that peoples' behaviour can be recognisably different as a consequence. A social interactive perspective would argue that all people are neurodiverse. The concept of a majority who are 'neurotypical' and a minority being 'neurodiverse' arises not because of the actual 'brain' differences, but rather because society is intolerant to these differences. In other words, 'neurodiversity' is a social construct. People are perceived as 'neurodiverse' when they come into conflict with social expectations and demands. It may be argued that the real issue at stake is not neurodiversity, but rather institutional discrimination against certain kinds of neurodiversity. The origin of the concept of neurodiversity is the *social model of disability* (Oliver, 1990) that argues that we are disabled by society rather than any 'impairment' and the solution is to eliminate unnecessary social barriers, rather than change or remediate the person. The issue to be analyzed and answered then is what social barriers have been constructed to make life and learning disproportionately difficult for people with SLDs, and why are they maintained despite the evident difficulties and psychological trauma (e.g. Edwards 1994) they create. (Cooper, 2006).

The sociological approach argues that social institutions are rarely as they seem on the surface, and even more rarely as they are represented. To try to understand them, we should focus on their social functions, rather than on how they are perceived or represented (Berger 1963). Post-industrial education was developed to respond to a number of systemic purposes, which include training individuals to serve the means of

production in a variety of roles from management to workers. This involves literacy so that bureaucracies can function effectively, and instructions can be followed properly. Part of preparing people for the so-called 'world of work' is to develop a mind-set to work as instructed, as well as inculcate values such as 'discipline, individualism and a 'fair day's pay for a fair days work'. For four decades some sociologists (e.g. Bowles and Gintis 1976, Bernstein 1975, Young and Whitty 1976, Bourdieu and Passeron 1977) have argued that a principle social function of education is to fail a significant sector of the population and persuade them that it is their own fault. Their argument is that this serves to reproduce current social relationships, and predisposes people to accept that we live in a meritocratic society, and that individuals 'deserve' their fate within the economic and social hierarchies. In such a way, education maintains the current socio-economic power structure (Cooper, 2006). To serve this purpose, schools decide what is to be learned, how, in what order, and how it is assessed. A great deal of the assessment requires memorising sequence and detail. The more simple the education, the less analytical or imaginative thought is required. It can be argued that this mirrors social roles in a factory where the worker is required to do as they are instructed and the need to handle emerging problems increases as the manager rises in status. What is to be learned by students is also divided up into different subjects that are generally learned in isolation from each other, which mirrors the division of labour in mass production. Briefly, those that are successful at the 'basics', and can go on to analyse, are groomed for management levels of work, compared to those who are doomed to labour. In other words, rather than a pedagogic principle underlying the way schools function, the needs of the means of production are served (Cooper, 2006)

This system also depends on the 'authority' of the educators who are imposing a way of learning ('for the learners' own good'). The system is intolerant of learners who want to choose what to learn from an early age, who do not recognise the boundaries between subjects, or between 'teacher' and 'taught'. It also tends to be intolerant to those who arrive at solutions in unconventional ways, often accusing such learners of 'cheating', or not listening (Cooper, 2006). In other words, the structure of education is intolerant to different approaches to learning which rely on passionate interest, making interesting connections across subject boundaries (thinking 'outside the box') learning in bursts (when the pattern of information resolves into meaning) and intuitive approaches based

on learning by 'feel'. In contrast, the system requires something measurable to assess, which is usually done through timed pencil and paper tests (or in the case of reading, by measures of single word decoding rather than understanding what is read or fluency and speed of reading) which provide the appearance of fairness and meritocracy, but disadvantage people who struggle with rote learning and providing expected answers (Cooper, 2006).

While we now know that learning is more effective and productive when learners feel safe, are able to follow passionate interests, and make useful connections (e.g. Damasio 1994), education systems tend to remain trapped by their social functions to impose authority, limit learning to predetermined and prescribed 'curricula' and testing learning by testing memory or skill behaviour rather than understanding. The fact that we can agree that people with 'specific learning difficulties' have difficulties, may seem to imply that these represent a 'deficit'. However, many authors argue that the 'difficulty' is merely a response to the educational expectation. They are no more a deficit than being required to use a right hand when you are left-handed. It looks, and usually feels, like a deficit while the expectation remains unquestioned. Once the expectation is questioned, we can recognise that it is the expectation that is disabling, not the intrinsic difference (Cooper, 2006).

Going back to answer the initial questions, namely "What is dyslexia" and "What are specific learning disorders", truth is that there is no single answer to these questions. These "conditions" can be analyzed from multiple points of view, and depending on which point of view we choose to adopt, we will find different answers. Although the root causes are yet to be clarified, it is undeniable that in these cases there are different physical conditions divergent from the "norm" that lead to dyslexia, or specific learning disorders (the so-called medical model). On the other hand, however, it is rather incomplete to define these conditions as merely deviations from the standard norm, since it is the society in which we live that has decided what the standard norm should be. The dominant model in Western culture, the *medical* model, presents disability as an individual pathology, abnormality, or difference from a standardized norm (Olkin & Pledger, 2003). This model presents disability as a problem of the individual or the individual's family—a problem to be dealt with by a small number of specialized individuals (i.e., doctors, special educators), and the perceived solution is a cure or *normalization*, a form of assimilation.

On the other hand, the *social* model, or similarly, the minority model of disability, views disability as a social construction (Olkin & Pledger, 2003; Shakespeare, 1996). This model, common among Disability Studies scholars and activists, holds that disability is created by a society that is inaccessible to and biased toward people with certain bodies and minds. This model parallels other social constructivist movements of racial, gender, and sexual/gender minority groups, and places the onus of change on society, rather than the individual or specialists seeking to change the individual (Olkin & Pledger, 2003; Shakespeare, 1996). For this reason, the social model engenders action to reduce social barriers and establish civil rights (Dirth & Branscombe, 2017). It is precisely the concept of "deviation from the standard norm" that allows us to introduce another concept that has come to light at the end of the twentieth century, that of *ableism*.

1.4.2 An ableist world

The World Health Organization (2020) estimates that 1.3 billion people – about 16% of the global population, or 1 in 6 of us – currently experience significant disability. Disability is bound to all other social identities (e.g., gender, race, sexual orientation). This means that social identities of disabled people are multifaceted, and also that disabled people may be exposed to multiple forms of discrimination. Disability is unique as one of the only minority groups one could either be born into or could join at any time (Bogart, Rosa, & Slepian, 2019). Unlike racial and ethnic identities, people with disabilities often have *solo status* (Lord & Saenz, 1985), which means that they may be the only member of their family or community who shares that identity, challenging the formation of ingroup identity. Disability models describe individual or social-level beliefs about disability (Olkin & Pledger, 2003; Shakespeare, 1996; Swain & French, 2000).

In *No Pity*, his history of the disability civil rights movement, Joseph Shapiro (1994) chronicles the dominant cultural responses to disability. One model is exemplified by the poster children of the muscular dystrophy telethon, which he refers to as "Tiny Tims" — "the idea that disabled people are childlike, dependent, and in need of charity and pity" (p. 14). According to Shapiro (1994), the belief that disability could be overcome led to

the rise of the other dominant image of disability: the inspirational disabled person, or the "Supercrip." Shapiro argues that this image is deeply moving to many nondisabled people and the press, but is widely considered to be oppressive to the majority of disabled people. Cyndi Jones, a disability activist and former poster child, argues that, like the image of the poster child, this image implies that a disabled person is presumed deserving of pity — instead of respect — until the person proves capable of overcoming disability through extraordinary feats (Shapiro, 1994). Both of these dominant stereotypes of disability, "Tiny Tims" and "Supercrips," have at their core *ableist perspectives*, the failure to accept and value disabled people as they are (Hehir, 2002).

But what does the term "ableism" mean, and what does it have to do with dyslexia and specific learning disorders? The term *ableism* was coined in the 1980s in the context of Disability Studies, i.e. the scientific discipline, developed in predominantly Anglo-American and Northern European circles since the 1970s, that deals with disability, no longer only as an individual medical phenomenon, but from a multidisciplinary (political, historical, cultural, legal, pedagogical, social) perspective, similar to Women's Studies or African American Studies. The aim of Disability Studies is disrupting the idea that disabled people should be defined primarily through their disabilities by others, retaining instead the right for disabled people to define their own relationships with disability (Dolmage, 2017). Disability Studies scholar Fiona Kumari Campbell's (2001) definition focuses on the dehumanizing role of ableism:

"Ableism refers to a network of beliefs, processes and practices that produces a particular kind of self and body (the corporeal standard) that is projected as the perfect, species-typicaland therefore essential and fully human. Disability then is cast as a diminished state of being human." (p. 44)

Other conceptualizations focus on the "othering" of disabled people: ableismis "ideas, practices, institutions and social relations that presume ablebodiedness, and by so doing, construct persons with disabilities as marginalised… and largely invisible 'others'" (Chouinard, 1997, p. 380). Further, ableism obscures the role of social environments and institutions, causing people to "falsely treat impairmentsas inherently and naturally horrible and blame the impairments themselves for the problems experienced by the people who have them" (Amundson & Taira, 2005, p. 54)

Ableism generally refers to social-level oppression, while the similar term *disablism* more commonly describes individual-level discrimination (Jun, 2018), although these terms are sometimes used interchangeably. The term ableism has become more and more popular over the term disablism, especially among American Disability Studies scholars and disability rights activists (BBC News Ouch Blog, 2014). Thus, the term "ableism" has been preferred to "disablism" because the term parallels other terms widely used by social psychologists such as racism, sexism, and heterosexism. For this special issue, it has been adopted a broad definition of ableism, intended to parallel social psychological definitions of other "isms" in order to spur social science research in this area: *Ableism is stereotyping, prejudice, discrimination, and social oppression toward people with disabilities* (Bogart & Dunn, 2019).

Included in ableism are actions and behaviors of various kinds, more or less overt, and not necessarily conscious (and in some cases it may be called *internalized ableism* when it concerns disabled people themselves). Part of the abilist narrative are the showmanship, pietism and paternalistic attitudes, the assumption that disability is necessarily a tragedy, an immense misfortune, or the representation of disabled people as eternal children. Ableist language may regard both the use of deliberately offensive vocabulary against disabled people and the metaphorical use, in everyday language, of words and expressions such as "But are you deaf?", "Are you blind?", "You look like a handicapped person!", in which disability is used as a metaphor to express something negative, often without any real awareness on the part of the speaker (Accademia della Crusca).

The first traceable attestations of ableism in Italy date back to 2006, when Italian Academia also began to address Disability Studies. However, Google Trends shows a relevant spike in searches for the term only in November 2020. This surge can be attributed to the House's approval of the so-called Zan Law, which concerns "Measures to prevent and combat discrimination and violence on grounds of sex, gender, sexual orientation, gender identity and disability" and the public debate that it ensued. In addition to the noun *abilismo*, *abilista* as an adjective (abilista person, abilista attitudes, abilista aggression) is also discreetly widespread in contemporary Italian (Accademia della Crusca).

The various definitions of ableism in the literature share common origins that are rooted in the discrimination and oppression that many disabled people experience in society (Overboe, 1999; Weeber, 1999). Laura Rauscher and Mary McClintock (1996) define ableism as "a pervasive system of discrimination and exclusion that oppresses people who have mental, emotional and physical disabilities.... Deeply rooted beliefs about health, productivity, beauty, and the value of human life, perpetuated by the public and private media, combine to create an environment that is often hostile to those whose physical, mental, cognitive, and sensory abilities . . . fall out of the scope of what is currently defined as socially acceptable" (p. 198). Applied to schooling and child development, ableist preferences are clear. From an ableist perspective, the devaluation of disability results in societal attitudes that assert that it is better for a child to walk than roll, speak than sign, read print than read Braille, spell independently than use a spell-check, and hang out with nondisabled kids as opposed to other disabled kids. In other words, for many educators and for society, it is preferable for disabled students to do things in the same manner as nondisabled kids. Ableist assumptions become dysfunctional when the educational and developmental services provided to disabled children focus inordinately on the characteristics of their disability to the exclusion of all else, when changing disability becomes the overriding focus of service providers and, at times, parents. Narratives of disabled people and their parents are replete with examples of how changing disability became the focus of their young lives and how such a focus denied them the opportunities taken for granted by nondisabled people. These narratives speak to the deep cultural prejudices against disability that they had to endure from an early age — that disability was negative and tragic and that "overcoming" disability was the only valued result (Ferguson & Asch, 1989; Rousso, 1984).

Children who are neurodiverse, including those who are autistic, dyslexic, dyscalculic, and dyspraxic (NCSE 2019), can have a more challenging experience of building friendships and peer relationships inside socially complex classrooms (Al-Yagon 2016; Calder, Hill, and Pellicano 2012; Lasgaard et al. 2010; Van der Sande et al. 2018). Neurodiverse children can have additional social challenges due to social information processing problems (Crick and Dodge 1994; Lemerise and Arsenio 2000; Patrick 1997) and because they can be socially stigmatised by their neurotypical classmates (Vaughn et al. 1990, 1996). Many admitted that, during the school years, they exerted great energy

resisting and strategically navigating a school environment that was not built for them and was inscribing ableism, amongst other internalized oppressions, onto their experience and sense of self. Resistance themes included avoidance, self-advocacy and navigating the school system (Jones & al., 2023; Van Schaik, 2021).

This is what ableism has to do with dyslexia and specific learning disorders: if neurological diversity was normalized within the school system, neurodivergent students would probably not have to experience and would not internalize ableism. Making diverse resources, supports, teaching styles and assignments automatically available to all students would be central to a neurodiversity paradigm, and classrooms would finally be places also for neurodivergent students.

1.5 "Learning Disorder", "Learning Disability", and "Learning Difficulty" : is there a difference?

The discussion on how to define SLDs (specific learning disorders) is not merely academic: each of the terms used to describe dyslexia, dysorthography or dyscalculia corresponds to a conceptualisation of the discrepancy from what is considered to be the typical performance of an individual at a given stage of development, i.e. an interpretation of its nature. These terms are not in antithesis, but rather they express different aspects, all present and all important for describing and understanding the phenomenon of SLDs. The term *disability* defines a functional deficit that derives from a defined biological condition and that tends to persist over time. When referring to learning difficulties, this term also takes on an ethical purpose of social protection; it is useful when it is used to claim a right to equal opportunities in education; that of disability is, in fact, a social relationship, not a subjective condition of the person (Stella, 2010). The term *learning disability* (LD) is used in different contexts with different meanings. *Specific learning disability* is a term usually used by persons working in the educational sector; it covers all conditions including LD, but it lacks a clear definition and criteria for diagnosis. The use of this term has led to increased confusion and lack of access to appropriate interventions for affected children, because the management is different for the conditions

grouped as SLDs (specific learning disorders). The confusion prevailing in this area is also due to the co-occurrence of two different terms – 'learning disorder' and 'learning disability', which in its turn is interchanged with the term 'learning difficulty'. Nelson's Textbook of Paediatrics, the ICD-11, the DSM-5, Comprehensive Textbook of Psychiatry, and Rutter's Textbook of Child and Adolescent Psychiatry use the term *learning disorder* for conditions with neurodevelopmental dysfunction affecting reading, writing, and calculations. They have not used the term *learning disability*. (Vidyadharan & Tharayil, 2019).

In the United States there is a federal law called "Individuals with Disabilities Education Act (IDEA)," which covers educational benefits for children with learning-related problems. More specifically, this is a law that makes available a free appropriate public education to eligible children with disabilities throughout the nation, and ensures special education and related services to those children. IDEA uses the term 'specific learning disability', and not 'learning disorder' as do the DSM-5 and the ICD-11. In the United Kingdom, the Health and Care Act (2022) introduced a requirement that all regulated health and social care service providers ensure their staff receive training on learning disability and autism.

The United Kingdom Government uses the term 'learning disability', and refers to the definition of the Department of Health and Social Care (DHSC) (2001), according to which a learning disability is a significantly reduced ability to understand new or complex information, to learn new skills (impaired intelligence), with a reduced ability to cope independently (impaired social functioning), which started before adulthood. Moreover, the degree of disability can vary greatly, being classified as mild, moderate, severe or profound. In all cases, a learning disability is a lifelong condition and cannot be cured. The UK Government also makes a distinction from learning disability and learning difficulty, which is considered a reduced intellectual ability for a specific form of learning and includes conditions such as dyslexia (reading), dyspraxia (affecting physical co-ordination) and attention deficit hyperactivity disorder (ADHD). A person with a learning disability may also have one or more learning difficulties (Emerson & Heslop, 2010).

"Essential Paediatrics" by OP Ghai, the most recommended and used textbook for pediatrics subject in the fourth year of MBBS (*Medicinae Baccalaureus, Baccalaureus Chirurgiae*, that is Bachelor of Medicine, Bachelor of Surgery) uses the term "learning

disability" to denote the condition referred to as a learning disorder by all the above authors except those from the UK. Dyslexia, dysgraphia, dyscalculia, and reading comprehension difficulty (which are listed under SLD in DSM-5/ICD-10 and -11) here are listed as subcategories. Moreover, in the practice guidelines by clinical psychologists, the terminology used is 'learning disability'. The Indian Academy of Paediatrics has published a consensus statement on this condition, and they too use the term specific learning disability. But while detailing this condition, they give a description that makes it clear that they refer to SLD as defined in ICD-11 and DSM-5. The Government of India has passed a new act that covers all disabilities, the Right of Persons with Disabilities Act (RPWD Act, 2016), which uses the term 'learning disability' for 'learning disorder' (Vidyadharan & Tharayil, 2019).

The definition of *disorder*, on the other hand, grasps more the clinical dimension in that, starting from a given norm that is defined arbitrarily, but with quantitative characteristics, it assumes that under certain conditions individuals who deviate significantly from it express a significant distortion of the mechanisms that allow the norm to be reached. The term disorder with reference to learning difficulties appears in the DSM and ICD classification systems of Mental Disorders; these manuals contain the criteria shared by the scientific community to identify disorders and their purpose is, in fact, to facilitate scientific communication (Stella, 2010). As Vidyadharan & Tharayil point out, a *disorder* is a medical condition that may or may not give rise to disability depending on its severity, while a *disability* is the functional disadvantage suffered by a person affected by that condition. In this context, poor academic ability (disability) could be due to different causes such as intellectual deficits, mental illness, poor motivation/teaching, or SLD. So, using the word disability to refer to one of the conditions that cause the disability itself may be confusing.

As Brandenburg et al. (2021) report, DSM-5 (American Psychiatric Association, 2013) and ICD-11 (World Health Organization, 2021), the two major international classification systems for mental disorders, share some key assumptions concerning specific learning disorders (LD) such as (a) the presence of academic skills below the age-expected level, (b) the onset of symptoms during the first years of schooling, and (c) the persistence of the learning problems. Nonetheless, they have quite different approaches to the classification of these disorders. The differences concern the classification of the various

LD types as distinct disorders and to the requirement of an IQ-achievement-discrepancy criterion in diagnosing LD. Specifically, in ICD-11, as in the previous versions, the various types of LD, i.e. mathematics disorder (MD), reading disorder (RD), and writing disorder (WD), are classified as discrete diagnostic entities, each one with its own diagnostic criteria. According to this hypothesis, these three LD types are qualitatively different from each other in the symptoms, the (neuro-)biological markers, and the cognitive correlates, and because of that they require a separate classification. In contrast, in the newest version of DSM-5, the various types of LD are integrated into one single category and are thus considered to reflect different subtypes of the same underlying disorder. As a consequence, children receive the same overarching diagnosis of a Specific Learning Disorder irrespective of the academic domain(s) affected by the learning problems. However, different manifestations of the symptoms present at the time of diagnosis can be expressed through the use of specifiers, thus taking into account that children might exhibit severe learning problems in one or two academic domains only. Brandenburg et al. (2021) precise how, in support of this new classification, the DSM task force (Tannock, 2013) argued that the various types of LD seem to overlap considerably in their cognitive functioning profiles and, therefore, may not exhibit a distinct set of cognitive causes. Rather, differences in underlying cognitive skills between MD, RD, and WD were considered to be merely dimensional in nature, rather than qualitatively different (cf. Tannock, 2013). Among the arguments in favor of a common LD classification, the DSM-5 task force also highlighted the high comorbidity between the three LD types at the time of diagnosis, and even more so in their course of development suggesting the presence of joint cognitive risk factors (cf. Tannock, 2013). That is, low cognitive specificity (i.e., high overlap in the underlying cognitive deficits) might be a crucial factor in explaining why single LD often worsen into multiple LD or even change from one domain (e.g., MD-only) to another (e.g., RD-only) throughout the school career. With respect to IQ-achievement discrepancy, ICD-11 (as its previous versions) requires the child's low academic achievement to be unexpected given his or her intellectual potential. This uncoupling between intelligence and academic achievement has fueled the notion that children who fulfill the IQ-achievement discrepancy criterion are qualitatively distinct from poor learners whose achievement scores are in line with expectations based on their intelligence (e.g., Meyer, 2000). Over the past decades, however, this criterion

has been highly debated (cf., Snowling et al., 2020) and DSM-5 has now abolished this criterion in the definition of LD. At first glance, there is cumulating evidence supporting the notion that children with IQ-discrepant achievement problems do not differ from non-discrepant poor learners on underlying cognitive functioning skills (e.g., Stuebing et al., 2002; Snowling et al., 2020) or in the general course of their learning problems (e.g., O'Malley et al., 2002; Gresham and Vellutino, 2010). Yet again (and such as with the various LD types), studies directly contrasting cognitive profiles between IQ-discrepant and non-discrepant LD are scarce. Consequently, to date there is no sound empirical knowledge base that can answer the question of whether the IQ-achievement discrepancy criterion leads to the identification of qualitatively different subgroups (Brandenburg et al., 2021).

Currently, The European Commission registered the new European Citizens' Initiative 'Focus on Specific Learning Disorders at EU level'. The organisers of the initiative call for an easier access to education for people suffering from specific learning disorders (such as dyslexia, dyscalculia and dysgraphia). The organisers are concerned about the current discrepancy between the definitions of learning disorders, the different methods of assessing them and the assistance provided in individual member states to people suffering from them. Thus, the European Commission makes use of the term 'specific learning disorders' to classify dyslexia, dyscalculia and disgraphia. They ask the Commission to submit a proposal for common guidelines on how to identify and manage these disorders in order to ensure better integration of sufferers into the education system, even when exercising their right to free movement. The initiative calls on the Commission to contribute significantly to research on these disorders.

Italy too refers to these conditions as "specific learning disorders". Impossibility of classifying SLDs as a handicap, and therefore to be able to refer to the principles and instruments of Act 104/1992, which outlines the general principles concerning the 'rights, social integration and assistance of the disabled person', difficulty in having diagnoses based on defined protocols as well as a good dose of rather widespread scepticism have prevented the issue from being tackled with decision and a structured method. This gap was filled by Law No 170/2010, which lays down general rules on the subject and provisions 'on specific learning disorders in schools'. Improperly, this law is qualified as a national law on dyslexia, a reductive term since specific learning disorders manifest

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themselves in a plurality of forms that can coexist or present themselves separately (Scala, 2010).

1.6 Italian legislation for students with SLDs

According to Law No. 170 'New regulations on specific learning disorders in schools', dyslexia, dysorthography, dysgraphia and dyscalculia were recognised as specific learning disorders, and the rights of the persons concerned were enshrined. Due to the peculiarity of Specific Learning Disorders, the Law also mentions the right to study, aimed specifically at pupils with SLDs. In fact, the type of intervention for the exercise of the right to study provided by the Law focuses on individualized and personalized teaching, compensatory tools, dispensatory measures and appropriate forms of verification and evaluation. (Ministero dell'Istruzione, dell'Università e della Ricerca, *Linee Guida per il Diritto allo Studio degli Alunni e degli Studenti con Disturbi Specifici di Apprendimento*, 2011).

On 12 July 2011, the Ministry of Education issued the Decree implementing Law No. 170 with attached guidelines for the right to study of pupils and students with specific learning disorders, a 'tool' that every teacher should become familiar with. On the 27 July 2012, the State-Regions Conference sanctioned the Agreement on "Indications for the diagnosis and certification of Specific Learning Disorders", with the main purpose of simplifying the procedure for the certification of SLDs - with particular attention to the reception phase of the documentation by schools - and to make the methods and forms of certification of the diagnosis uniform throughout the country. (Cappa et al., 2013).

In Italy, the PDP ("piano didattico personalizzato", that is a "personalized learning plan") is the compulsory planning document by which school defines the interventions it will take towards the pupil with SLDs to ensure his or her educational success. The PDP must be shared with the family, and is required by the 2011 guidelines, which specify the following in paragraph 3.1: "Individualized remedial activities, personalized teaching methods, as well as compensatory tools and dispensatory measures should be made explicit and formalized by the educational institutions, in order to ensure a useful tool for

educational continuity and the sharing with the family of the initiatives undertaken."
(Ministero dell'Istruzione, dell'Università e della Ricerca, Decreto N. 5669).

Chapter II – Academic success, self-concept, mental health, study approaches and dyslexia

2.1 Self-concept, self-esteem, and self-efficacy

"Being human means being conscious of having a self and the nature of the self is central to what it means to be human" (Lewis, 1990).

As Humphrey (2002) states, although the terms self-concept and self-esteem are often used interchangeably, they represent different but still related constructs. Self-concept is "a student's perceptions of competence or adequacy in academic and nonacademic (e.g., social, behavioral, and physical) domains and is best represented by a profile of self-perceptions across domains. It is defined as "an organised schema that contains episodic and semantic memories about the self and controls the processing of self-relevant information" (Campbell & Lavallee, 1993, p.4). On the other hand, as reported by Manning (2007), self-esteem is "a student's overall evaluation of him- or herself, including feelings of general happiness and satisfaction (Harter, 1999)." It can be defined as "the evaluative component of the self-schema, particularly the degree to which one is satisfied with it, in whole or in part" (Beane & Lipka, 1986). Self-esteem is "a personal judgement of worthiness that is expressed in the attitudes the individual holds toward himself" (Coopersmith, 1967, pp. 4–5).

Examination of the self-concept literature indicates that two models of self-concept have guided research in the area: unidimensional and multidimensional models. Early models of self-concept were unidimensional. According to these models, there is only a general factor of self-concept—i.e. general self-concept or global self-worth—or that a general factor dominates more specific factors. General self-concept is concerned with one's global sense of well-being as a person and general satisfaction with oneself. Nevertheless, with advances in methods of data analysis —e.g. factor analysis— self-concept was shown to be a multidimensional rather than a unidimensional construct. Self-concept theorists and researchers have pointed out that in fact methodological problems

were responsible for the unidimensional theory/model of self-concept. (Taylor et al., 2010).

Currently, self-concept is considered a multidimensional construct, which means that self-concept ratings could be made across various domains—e.g. social, academic, physical. It is believed that the relation between self-concept and other variables cannot be fully understood if the multidimensional nature of self-concept is not taken into consideration. However, considering self-concept as a multidimensional entity does not eliminate the existence of general self concept or global self-esteem. Indeed, as Taylor et al. report, Harter asserted that global self-esteem and self-perceptions in specific areas are separate and distinguishable. Supporting this assumption, Harter and Pike (1984) empirically demonstrated that individuals, except very young children for whom "one is either 'good at doing things' or one is not", can make global judgements of their worth as a person, and provide specific self-evaluations across a wide range of domains. Therefore, nowadays there is some consensus that global self-worth and perceptions in specific domains are distinct and can be studied separately (Taylor et al., 2010).

According to the Oxford Dictionary (2012), self-concept is "an idea of the self constructed from the beliefs one holds about oneself and the responses of others: a self concept is largely a reflection of others towards the individual (Popovici, Buică-Belciu, 2012). It is also what comes to mind when we think of ourselves, and it provides answers to the old questions "Who am I?", or "Where do I belong?". It is seen by the scientific community as an active agent that seeks competence, resolution of life phase conflicts, and mastery in real world terms, yet it is also considered as molded and shaped by our early experiences and relationships (Oyserman, 2001). This construct shapes how we develop during childhood and, at the same time, determines what kind of adults we will turn into. It begins to develop during childhood and adolescence, and for this reason it is important for adolescents to develop a positive self-concept in order to increase their chances to live a satisfying adulthood. Sternke asserts that self-concept is defined by Eccles et al. (2005) as "people's general composite or collective view of themselves across multidimensional sets of domain specific perceptions. These perceptions are based on self-knowledge and evaluation of value or worth of ones own capabilities formed through experiences with and interpretations of the environment. People's self-concept will

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address a more factual side of their life, such as knowing what they enjoy or how they tend to think." (Sternke, 2010, p. 15).

As reported by Pestana (2014), there are several models of self-concept currently used. Burns (1980) describes self-concept as being composed of two elements: self-image and self-esteem. Self-image is made up of beliefs or attitudes about oneself developed through life experiences and feedback received from other people, and self-esteem is the evaluation of one's self image. Hattie (1992) argues that self-concept is made up of hierarchical and multifaceted beliefs. It guides behaviour, changes with age and it is influenced by other people, situations and culture. According to Purkey and Schmidt (1996) self-concept is "organised, dynamic, consistent, modifiable and learned". The authors assert that the self is organised in a stable, orderly and harmonious way and is composed of subselves. In turn, these subselves hold beliefs that can be divided into categories (e.g., man, friend) and attributes (e.g., strong, loyal), which are linked together (e.g., strong man, loyal friend) and hierarchically organised within the global self itself. (Pestana, 2014).

According to Bandura (1977), self-system refers to cognitive structures that serve as reference points and specific functions for perceiving, evaluating, and regulating behavior. The self is conceived as the set of processes that enable self-regulation of behavior: self-observation, self-evaluation, and self-reinforcement. Therefore, it is essential to detect the subject's representation of the self, linked to the representations and expectations that others have of him or her. Identity is based on the representations of the self and includes the sense of continuity of one's self, the planning, and the relation with the social environment. The achievement of identity is considered the fundamental goal of the evolutionary process. Identity is considered an open system that arises from childhood identifications but also includes the integration of the present and the future, comparing personal needs and expectations with those of others (Erickson) (Di Nuovo & Magnano, 2015).

As reported by Di Nuovo and Magnano, Lynch, Foley-Peres and Sullivan (2008) summarize the constructs related to the notion of *self* into three types:

− the *actual* or *ideal self*, regarded as an organized configuration of perceptions about the -real or ideal self, of which the individual is aware;

- the *reflected* or *empathic self*, as a constellation of ideas constructed on the basis of social interactions about how others see us;
- the attitude toward *self* or *self-values*, which can be defined as the sense of personal worth, includes positive or negative attitudes toward the self and is the prerequisite for identity in the sense previously defined.

2.2 Global self-concept and self-esteem in people with LDs

Studies show that, on average, self-esteem increases gradually from adolescence to middle adulthood and then declines in old age. Self-esteem is particularly critical during adolescent development, as it is more likely to have lower levels compared with other age groups. Low self-esteem in adolescence is a risk factor associated with internalized/externalized mental health problems, poor academic success, lower well-being, and higher frequency of health risk behaviors. These problems are mainly observed at school, which plays a fundamental role in the development of self-esteem and represents one of the most important social environments for adolescents. In this period, students learn about themselves and experience major biological, cognitive, and socioemotional changes characteristic of adolescence. School life also exposes adolescents to greater sources of stress (e.g., conflict with peers and teachers, failure, bullying, body image stereotypes, social network addiction, among others), as well as to positive experiences that could enhance their self-esteem (e.g., peaceful learning environment, peer support, or academic achievement) (Caqueo-Urízar et al., 2021). Research has also shown that there is a close and reciprocal relationship between self-esteem and academic success (Kershner 1990; Preeti et al. 2016).

Scholars have asserted that studying self-concept in general, and studying self-concept in students and adults with SLDs is crucial because research has shown that low self-concept and depression are correlated (Benson & Ivins 1992; Wiest et al. 1998). In addition, as Pestana (2014) points out, other studies proved that a positive self-concept is associated with psychosocial well-being, peer acceptance and self-confidence (Harter 1993),.Individuals with more positive self-perceptions tend to be happier than those with

negative self-perceptions (Swann 1996), are able to deal with difficulties more successfully (Carlock 1999), have high adaptability, are more likely to have an active role in social groups, and can initiate good motive relations with others (Fathi-Ashtiani et al., 2007) (Fathi-Ashtiani et al., 2007).

The self-concept of children with learning disabilities (LD) was generally assumed to be more negative than the one of normally achieving (NA) children, and for this reason since the mid-1970s many scholars have conducted a number of studies to prove this assumption through empirical research. At the present day, the literature on self-concept in learning disabilities has yielded contradictory findings. Indeed, as registered by Pestana, most previous studies on the self-concept of individuals with learning disabilities have reported the global self-concept of the participants as being either negative or positive (Pestana, 2014).

Pestana reports that, whilst Silon and Harter (1985) found that children with a typical development have a more strongly defined self-concept than children with learning disabilities, and Kloomok & Cosden (1994) found that students with learning disabilities often have poor self-concept, Lewandowski & Arcangelo (1994) found that adults with learning disabilities score as well as their peers without learning disabilities in the self rating scales of self-concept and social adjustment. He also points out that later studies (Chapman et al. 2004; Gadeyne et al. 2004; Gans et al. 2003; Reschly & Christenson 2006) have supported Lewandowski and Arcangelo's results by also not finding any significant differences on measures of global self-concept between individuals with and without learning disabilities. However, several studies have supported Kloomok and Cosden's findings that students with learning disabilities often have poor self-concept (Vaughn & Elbaum, 1999).

In line with the new models of self-concept proposed at the end of the 90s, Seleshi Zeleke (2004) suggested that different aspects of the self-concept needed to be anaysed separately rather than from a global perspective. He has argued that, although the academic self-concept of students with learning disabilities has been found to be more negative than the self-concept of their peers without LD, there is no strong evidence suggesting that students with learning disabilities have more negative social or general self concepts than students without learning disabilities (Pestana, 2014). Other studies confirmed this result (Frederickson & Jacobs 2001; Gans, Kenny & Ghany 2004;

Ntshangase, Mdikana & Cronk, 2008). In these cases, the students in the learning disabled group did not generalize their feelings of academic weakness to more generalized self-concept perceptions. Instead, these studies reported that despite possible lowered academic self-esteem, individuals with LD in inclusive settings tend to display positive feelings about their overall self-worth (Bear et al., 1998).

Research proved that the context in which the students are placed strongly affects the image they build of themselves. In the United States, in the decades since the passing of Public Law 94-142 (the Education for All Handicapped Children Act, also known as the EHA, issued to support states and localities in protecting the rights of, meeting the individual needs of, and improving the results for infants, toddlers, children, and youth with disabilities and their families), the mandate to educate students with disabilities in the least restrictive setting has led to heated debate over the benefits and drawbacks of different educational environments for students with disabilities. The settings in which such students are educated can range from fully separated (i.e., special schools) to fully integrated (i.e., full inclusion). Historically, students with learning disabilities have been placed across the entire continuum of setting options. However, there has been a strong trend over the past decade toward providing instruction to students with LD in the general education classroom. According to the most recent national data available on educational environments for students with disabilities (U.S. Department of Education, 2001), in 1998–1999, 45.1 percent of students with LD were educated in separate environments for less than 21 percent of the school day, 38.4 percent were in separate environments 21–60 percent of the day, and only 15.5 percent were in separate (Elbaum, 2002). As reported by Humphrey (2002), the Butler and Marinov-Glassman (1994) study demonstrated support for the hypothesis that students with LD who attend special schools report higher self-esteem than those with LD in mainstream schools, and Humphrey noted that when teachers are better trained and equipped, students receive more attention and support, and their comparison groups are more realistic. The environments found in Humprey's study were considered more 'dyslexia-friendly'. Nonetheless more information is needed on the exact mechanisms of support for children in the Students with Specific Learning Disorders (SpLD) units, and it is still unclear what it is about the so-called 'dyslexia-friendly' institutions that promotes or facilitates positive self-concept and self-esteem (Humphrey, 2002). According to Bear & Minkle (1996), these findings are in line with

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those studies that proved that children with mild handicaps hold more favorable self-perceptions in those settings in which instruction is individualized and more positive feedback is forthcoming (Forman, 1988; Priel & Leshem, 1990; Bear & Minkle, 1996).

Researchers have also found that how children view their LD influences their self-esteem, and that children with higher self-esteem tend to view their LD more positively. While studies on adults suggest that an accurate understanding of one's LD is fundamental for a successful functioning (Spekman et al., 1992), the impact of self-understanding on children with LD is not as clear. Several studies have shown that having an accurate understanding of one's LD is associated with lower self-esteem (Bear & Minke, 1996) or depression (Heath, 1995). These studies suggest that children with LD who feel better about themselves may carry false impressions about the nature of their disability, that is they might deny their problems. Students may adopt this strategy to cope with the stress of feeling different in the short term, although it is likely that at some point in their development they will need greater understanding to develop effective strategies for compensating for their academic and social problems (Cosden et al., 1999).

As Pestana highlights, what current criticism states is that the two main limitations of many existing studies on self-concept in learning disabilities have been using quantitative methods and exploring self-concept as a global measure, and this may be the reason for the difference in the data concerning general self-concept and self-esteem in students and adults with SLD (Pestana, 2014). For this reason, one of the aims of this study is to investigate the concept of self in university students by taking into consideration the multifaceted nature of the self-concept construct.

2.3 Self-concept, self-esteem, self-efficacy and dyslexia

The empirical literature suggests that children, adolescents and adults with dyslexia are at risk of low self-esteem (Chapman & Tumner, 1997; Humphrey and Mullins, 2002; Alexander-Passe, 2006; Burden, 2008; Eissa 2010; Dåderman et al. 2014). According to Nalavany et al. (2011), there are several protective and risk factors that may positively and/or negatively impact self-esteem, such as family support, the presence of co-morbid emotional and behavioural disorders, and intrapersonal qualities (Morrison & Cosden,

1997), but an appropriate educational settings is considered to be one of the most crucial factors to affect the self-esteem of students with dyslexia (Jones & Heskin, 2010; Riddick, 2006; Nalavany et al., 2011). In this regard, Nalavany et al. (2011) conducted a study to investigate how different educational settings may influence adulthood in dyslexic people. The results of the analyses suggested that adults with dyslexia who attended special schools were significantly less likely to be clinically diagnosed with anxiety or depression, and they experienced significantly less emotional distress with regard to their dyslexia, and significantly higher levels of self-esteem than their peers who did not attend such specialist schools.

However, although currently there is a large body of research showing that self-esteem is often low, Terras et al. (2009) point out that this is not always true. As they report, research suggests that children who attend special units are less likely to report low levels of self-esteem than dyslexic children in mainstream schools (Burden & Burdett, 2005; Humphrey, 2002b; Zambo, 2004). According to Nalavany et al. (2011), the findings that indicate a higher self-esteem in students attending special schools can be summarised in three themes. Firstly, the mainstream school setting was the main source of negative emotional and social experiences and low self-esteem for the child, possibly due to being misunderstood by peers and teachers. Indeed, children with dyslexia in mainstream schools are more likely to be bullied and teased than children without dyslexia (Glazzard, 2010; Singer, 2005) and report feelings of ostracism and stigmatisation when leaving the regular classroom to receive special education services (Mattson & Roll-Pettersson, 2007). Secondly, special settings including specially trained teachers and peers who share the same learning difficulties have a positive effect on children's social and emotional adjustment. Nonetheless, it should be acknowledged that even when their experiences changed positively in the private school, Zambo (2004) found that shameful and painful experiences occurred in the previous mainstream schools left 'scars [that] last forever'. Thirdly, Nugent (2007) found that parents of children in special schools were more likely to report that their children were very happy than parents of children in mainstream resource teaching (Nalavany et al., 2011).

Glazzard (2010) investigated the factors that affect the self-esteem of learners with dyslexia. He conducted individual semi-structured interviews with pupils of 14-15 years old with an official diagnosis of dyslexia who were placed in mainstream schools. He

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found that the mainstream pupils with dyslexia were all very confident and they attributed this condition to the diagnosis and ownership of the label. In their opinion, the label helped them to explain their difficulties, because they discovered that they had a specific learning difficulty unrelated to intelligence. According to the findings, prior to the diagnosis their self-esteem was significantly lower than it appeared to be after the diagnosis (Glazzard, 2020). This assumption have been proved also by other studies (Taylor et al., 2010): the label 'dyslexia' seems to be important for dyslexic children, and as such the conclusions drawn by Riddick et al. (1997) and Alexander-Passe (2006) who suggested early identification is central to not only enhancing self-esteem but also the protection of a dyslexic individual's self-esteem are supported (Taylor et al., 2010).

Humphrey & Mullins (2002) argued that children with dyslexia perceive a strong association between reading ability and intelligence. They stated that these learners perceive themselves as lacking in intelligence because they struggle with reading, and they conclude that these learners will continue to think in this way until their reading is corrected. However, the data presented in Glazzard's study (2010) show that children do not always make this association. In fact, although many of the participants continued to find reading complex and challenging, they could separate their specific learning difficulty from intelligence, thus recognising the multidimensional nature of intelligence itself (Glazzard, 2020). Other studies confirm this assumption (Frederickson and Jackobs 2001; Terras et al. 2009).

According to Ingesson, from a developmental point of view children's self-esteem appears very vulnerable to the feeling of being different. In the period between ages 7–11, children's self-esteem generally drops in comparison to the rather self-confident pre-schoolers. During this period children start to evaluate themselves through the eyes of others, and are very sensitive to being different. If they feel that they are less competent than their peers, especially in such important areas as reading and writing during the first years at school, there is a risk of a considerable drop in self-esteem. Thomson & Hartley (1980) found that dyslexic children at this age tend to associate being a good reader with being happy, and Humphrey and Mullins (2002) asserted that children with dyslexia, in contrast to a control group, believed that when one is good at reading, one can be considered intelligent, and vice-versa. Thus, given that children with dyslexia are

generally poor readers, they are more likely to perceive themselves as unintelligent (Ingesson, 2007).

According to Humphrey and Mullins (2002), pupils with dyslexia are more prone to attribute success to external factors rather than internal factors, thus illustrating the theory of 'learned helplessness' (Peterson et al., 1993). Learners with dyslexia seem to attribute success to factors such as teacher quality rather than to their own intelligence. Success is thus blamed on external factors rather than being perceived as something that they can control. These findings suggest that learners with dyslexia are more likely to have a poor internal locus of control (Humphrey, 2001). The American Psychological Association (APA) defines locus of control as a construct used to categorize people's basic motivational orientations and perceptions of how much control they have over the conditions of their lives. People with an external locus of control tend to behave in response to external circumstances and to perceive their life outcomes as arising from factors out of their control. Instead, people with an internal locus of control tend to behave in response to internal states and intentions, and to perceive their life outcomes as arising from the exercise of their own agency and abilities.

Research has also pointed to the link between learned helplessness, attributional style and low self-concept (Humphrey, 2001). In contrast, learners without dyslexia blame failure on internal factors such as lack of effort or lack of interest in a subject but not lack of ability, thus protecting their self-concept. This suggests that learners without dyslexia tend to have a stronger locus of control (Glazzard, 2020).

Burden and Burdett (2005) focused on pupils' attitudes towards learning and their sense of agency in an independent residential school for pupils with dyslexia, challenging the findings by Humphrey and Mullins on the relationship between dyslexia, self-esteem and locus of control. In contrast, Burden and Burdett found that the pupils with dyslexia had 'highly positive attitudes towards learning' and 'held strong beliefs about internal personal control of learning outcome' (p. 103). The study found that the participants felt in control of their own learning and they felt capable of achieving their ambitions. Thus, the participants had not generally internalised feelings of learned helplessness. The findings have been replicated by other studies (Alexander-Passe, 2015). However, it is worth noting that Burden and Burdett's study was carried out in a specialist school for learners with dyslexia, while the study described by Humphrey and Mullins examined the

feelings of learners with dyslexia in both mainstream schools and special units for learners with dyslexia (Glazzard, 2020; Burden & Burdett, 2005). Again, the context in which these students were placed may have led to different results.

As far as adults and young adults with dyslexia are concerned, a small but growing body of research has addressed the psychosocial and emotional issues that AWD (adults with dyslexia) experience in their daily lives and their self-efficacy (Alexander-Passe, 2015a; Hellendoorn & Ruijssenaars, 2000; Ingesson, 2007; McNulty, 2003; Stagg, Eaton & Sjoblom, 2017; Nalavany et al., 2017; Powers, Le Loarne-Lemaire, Maalaoui & Kraus, 2021). Drnovsek et al. (2010) theorized that self-efficacy is context specific and multidimensional, and in the last few years research on the topic has begun to focus on self-efficacy in many spheres of activity. Results showed that, even in adulthood, dyslexia still had great impact on the daily life of the participants. Although most of them had learned to live with it, many had bad memories of their school careers and still felt different from others. A majority experienced problems in their vocational training and careers, and they attributed them to the dyslexia. Nonetheless, having problems did not mean that participants saw themselves as failures, and their self-concepts were overall positive. In particular, it seemed that those who chose not to continue studying after leaving school experienced their difficulties as much less frustrating than those who continued in formal education. They were more optimistic, with regard to their future prospects. Many of the individuals who were employed, now felt that school had been an 'extended torment', and they emphasized how much better off they were after having left school than they could ever have imagined (Hellendoorn & Ruijssenaars, 2000; Ingesson, 2007). According to Stagg et al., (2018), undergraduate students with dyslexia report overall lower self-efficacy beliefs than non-dyslexic students, even though they have successfully gained entry onto undergraduate courses, thus supporting previous research that reports students with learning difficulties to demonstrate lower self-efficacy for academic work (Hampton & Mason, 2003; Margolis & McCabe, 2003). However, Stagg et al. (2018) also highlighted that other studies report that pupils with dyslexia who continue into higher education in general have positive experiences from secondary school and a positive attitude toward education (Olofsson, Ahl & Taube, 2012).

Given the results not always in agreement, perhaps also due to the fact that the very definition of both self-concept and self-efficacy, as well as SLDs, has evolved over time, one of the aims of the following study is to investigate self-concept and self-efficacy in young adults attending university in correlation with reading efficacy and academic success.

2.4 Dyslexia and psychological development

2.4.1 The "Matthew Effect"

Parents and educators have long known that the psychological and social difficulties that characterize learning-disabled children and adolescents are often as problematic as the disability itself. Psychological literature describes learning difficulties as an important risk factor for psychological distress. Learning difficulties are associated with increased comorbidity, especially depression and anxiety (Cohen, 1986; Magari et al., 2013). As a matter of fact, research has proved that psychosocial problems complicate learning, school work, relationships, and the process of psychological development (Cohen, 1986). Learning disabilities increase the student perception of negative self-competence, triggering negative effects such as depressed mood, reduced pleasure and interest, irritability, fatigue, and weakened concentration. Moreover, failure at school favors the introduction of task-irrelevant thoughts, creates distraction and lower concentration on the task by interfering with the information processing system. These negative conditions reinforce the poor cognitive functioning and the reduced employ of metacognitive strategies by increasing subsequent opportunities of failures. This condition may lead to a vicious circle, the so-called "Matthew Effect", which is characterized by the mutual encouragement of an emerging negative self-perception and a decrease in opportunities for the acquisition and refinement of school skills, reinforcing a maladaptive emotional profile and underachievement at school (Alesi et al., 2014). According to Scarborough & Parker (2003) negative Matthew effects in children with LDs might operate at different levels. The LD itself, and its cognitive underpinnings, could impede the child's progress

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in academic learning, and falling behind at the outset could limit the child's opportunities for learning more generally. Moreover, teachers might hold lower expectations for children with LD, and give them instruction of reduced quantity and/or quality. Classmates may view a child with LD negatively, and reflect this stigmatization in their interactions with her/him. The child with LD may respond to any of the previous mentioned experiences with reduced effort, motivation, and self-efficacy, and may exhibit behavior problems. The occurrence, timing, nature, and scope of Matthew effects may depend on how many such consequences (and which ones) occur during a particular child's school years (Scarborough & Parker, 2003).

2.4.2 Internalizing and Externalizing behaviours

Problem behaviour can occur in two ways: externalizing and internalizing problem behaviours. According to the American Psychiatric Association, externalizing problem behaviour refers to behavioural problems, such as conduct disorders, aggressiveness, and antisocial behaviour, or attention deficit and hyperactivity, and are characterized primarily by actions in the external world. They consist of negative emotions directed against others, such as anger, aggression, frustration, and fear (Roeser et al., 1998). On the other hand, internalizing problem behaviours are characterized primarily by processes within the self and are related to emotional problems, like depression and anxiety. Thus, negative emotions are usually directed towards oneself rather than others (Roeser et al., 1998). In these cases, psychosomatic symptoms, such as headaches and abdominal pain, can occurr too (Kashani & Carlson, 1987; Kashani, Ray, & Carlson, 1984).

It is currently recognized that although the formal definition of dyslexia mainly concerns the learning aspects, the implications of having dyslexia and living with it affects the individual also in other parts of his/her life. There is a growing body of research indicating that dyslexic persons usually show higher traits of both externalizing and internalizing behaviors than non-LD persons (Riddick et. Al, 1999; Nalavany et al., 2017; Davis et al., 2009; Eissa, 2010; Carroll & Iles, 2006). Research indicates that individuals high in trait anxiety usually feel more threatened by situations that entail loss of self-

esteem or interpersonal relationships than individuals low in trait anxiety. As Riddick et al. (1999) pointed out, this means that dyslexic persons may be caught in a vicious circle where their literacy difficulties make them more prone to feelings of anxiety, and the anxiety in turn makes them more sensitive to any negative feedback associated with their literacy difficulties (Riddick et al., 1999).

It seems that this condition of suffering does not disappear as children grow. Nelson & Gregg (2012) conducted a study to investigate depressive and anxious symptomatology among transitioning adolescents and college students with ADHD, dyslexia, or comorbid ADHD/dyslexia, and found that students with dyslexia experienced higher levels of anxiety and depression during their first year of college. For most students, both with and without LDs, the transition from high school to college includes several challenges like physical separation from family and peers, and the demand to develop new social relationships in order not to feel isolated. Furthermore, most college settings include less direct contact with teachers, larger class sizes, more long-range projects, and less frequent evaluative feedback (Janiga & Costenbader, 2002). University challenges are different from high school, including no mandated dyslexia-related support services (e.g., Individual Education Plan), larger class sizes, and more demanding coursework. Furthermore, Cameron (2016) found that students with dyslexia often report being stigmatized by instructors and peers throughout the higher education journey (Nelson & Gregg, 2012).

There is a growing body of research that has focused on the psychosocial and emotional aspects that adults with dyslexia (AWD) have to live with everyday (Alexander-Passe, 2015a; McNulty, 2003). Given the circumstances, it is not surprising that adults with dyslexia usually report negative emotional experiences. The most common negative emotional experiences seem to be feelings of sadness, depression, emotional pain, stress, and anxiety. One of the greatest sources of suffering seems to be the experience of living in a society that associates literacy with educational and occupational success (Nalavany & Carawan, 2012). Adults with dyslexia often describe negative school experiences as being emotionally painful and not easy to forget, even in adulthood (Alexander-Passe, 2015b; Nalavany et al., 2011; McNulty, 2003). They may re-experience these traumatic episodes in adulthood at the university or in the work environment. Such experiences can worsen the global anxiety that is already a part of the

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emotional baggage that comes with dyslexia or with a learning disability (Nalavany et al., 2017).

2.4.3 Test Anxiety

Grills-Taquechel et al., (2011) reported that anxiety disorders are among the most prevalent child mental health concerns, and symptoms often appear early in childhood. An additional number of children also experience substantial subclinical anxiety and related problems—symptoms that frequently have a negative impact on development and that may worsen over time. For instance, children with anxiety concerns commonly experience also comorbid social (e.g., peer rejection, social incompetence, school avoidance) and emotional (e.g., poor self-concept, low self-worth, depression) difficulties (Grills-Taquechel et al., 2011).

Anxiety is divided into two main domains: trait anxiety and state anxiety (Spielberger, 1972). Trait anxiety is an individual tendency to perceive situations as dangerous and potentially threatening, while state anxiety is the perception of an emotional situation as unpleasant, and is usually accompanied by a physiological reaction provoked by the autonomic nervous system. Test anxiety is considered a form of state anxiety (Lufi et al., 2004).

As reported by Stevens (2014), the concept of test anxiety was born in 1952 when Mandler and Sarason developed the first widely used test anxiety questionnaire and discovered that low anxious students performed better than high anxious ones on intelligence tests (Hembree, 1988). Sarason (1978) indicated that when anxiety is connected to academic assessment the situation should be referred to as *test anxiety* (TA). In these situations, anxiety appears because the individual knows that his or her performance will be judged. Usually, people who have high trait anxiety tend to sense higher TA than those who have lower trait anxiety. The reason is that, when compared to others, they sense the situation as more dangerous. Suinn (1968) described TA as a sense of inability to have organized thinking, or to remember material at the time of the test as well as tension, and difficulty in reading and understanding simple sentences in the test.

In particularly extreme situations, the subject may experience feelings of nausea, sweating, diarrhea, blushing, or a higher heart rate (Lufi & Darliuk, 2005).

The deficit and the interference models for explaining test anxiety-ability relationships are the most frequently mentioned in the literature. The deficit model assumes that low cognitive abilities cause individuals to experience test anxiety. On the other hand, the interference model describes test anxiety as interfering with cognitive processing during test taking and thus disrupting test performance (Nelson et al., 2015).

Academic standing in college is largely determined by test performance. Because test performance in college affects students' short-term educational and, subsequently, long-term professional goals, tests for college students can be a cause of stress. Although a moderate level of test anxiety is thought to facilitate performance, high levels of test anxiety can be counterproductive and even damaging. Indeed, grades on college exams and college grade point average have been found to be negatively associated with test anxiety, because students may experience cognitive interference while preparing for examinations, taking examinations, or both (Cassady & Johnson, 2002; Chapell et al., 2005). In this sense, test anxiety may serve as a construct-irrelevant factor that reduces the validity of college test scores; that is, examinees' knowledge of the course material instructors intend to measure may be underestimated when test anxiety disrupts performance (Nelson et al., 2015; Cassady & Johnson, 2002).

Results from recent studies indicate that college students with reading difficulties (RD) are more likely to report higher test anxiety than do college students without RD (Plakopiti & Bellou, 2014; Nelson et al., 2015, Peleg, 2009). Relative to college students without RD, up to 5 times as many college students with RD report clinically significant test anxiety. College students with RD report significantly higher cognitively based test anxiety than physically based test anxiety (Nelson et al., 2015). However, by contrast, other studies show that LD is not necessarily a factor that differentiates the personality of adolescents with test-anxiety (Lufi & Darliuk, 2005).

Interestingly, findings by Nelson, Lindstrom, & Foels (2015) revealed statistically significant and medium to large correlations between measures of test anxiety and general intelligence, nonverbal ability, and working memory, but not with reading skills, verbal ability, and processing speed. This suggests that when general intelligence, nonverbal ability, and working memory scores are higher, test anxiety scores decrease, and vice

versa, thus confirming the results of previous research (Ackerman & Heggestad, 1997). However, the finding that nonverbal ability and working memory were negatively correlated with test anxiety, whereas verbal ability, processing speed, and readings skills were not, is unique, because previous research has found all of these cognitive abilities as well as reading skills to be negatively correlated with test anxiety (Ackerman & Heggestad, 1997).

The study here presented aims gathering empirical evidence to investigate the possible correlation between reading ability and test anxiety.

2.4.4 Anxiety and Achievement

According to Grills-Taquechel et al. (2011), a major question regarding the correlation between anxiety and dyslexia concerns the direction of the influence of anxiety and poor reading achievement. Previous studies have registered an association between anxiety symptoms and achievement. Based on these empirical findings, there have been developed two competing models.

Model 1: Anxiety Negatively Influences Achievement

The first hypotesis is that increased anxiety may impact students' performance on measures of achievement. According to researchers, anxiety can negatively impact problem-solving, self-regulation, and completion of new or difficult tasks that require efficient information processing. When students are distracted by their anxiety, they may perform worse. Indeed, studies have found that children showing high rates of test anxiety have also lower grades on classroom tests. It has also been registered that negative affective states can decrease memory functioning, thus provoking an inefficient processing of information. Therefore, anxious students may experience interference with their concentration, memory functioning, and/or information processing, which would decrease learning and, over time, would lower achievement. In this regard, Normandeau & Guay found a significant predictive relation for teacher-reported anxiety levels in kindergarten children and their first-grade achievement, as measured by school grades in

math and language. Likewise, Ialongo et al. examined the association between anxiety and achievement in 684 regular classroom students evaluated in the fall and spring of their first-grade year. Children identified as highly anxious in the fall, using a quartile split, were over seven times more likely to be in the lowest quartile for reading achievement in the spring (Grills-Taquechel et al., 2011).

Model 2: Reading Problems Lead to Anxiety

The alternative causal model that could account for the anxiety-achievement association suggests that children with significant learning difficulties may be more prone to anxiety. These children may develop anxiety symptoms in response to repeated failure experiences in classroom. In this regard, researchers have assumed that poorly achieving students may be at increased risk for subsequent socioemotional difficulties, and that learning difficulties are linked to anxiety and mood problems. In previous studies, children classified as poor versus good readers have been more likely to receive an anxiety disorder diagnosis (Separation Anxiety Disorder/Generalized Anxiety Disorder, Carroll et al., 2005; Generalized Anxiety Disorder/Social Phobia, Goldston et al., 2007). Other studies (Dolan et al., 1993; Goldston et al., 2007) noted that other internalizing symptoms (i.e., depression) were reduced over the course of the first-grade year when low achieving students enhanced their performances. Thus, targeting achievement may reduce anxious symptomatology, in particular with early elementary school students. Similarly, it may be that children who respond to intervention for their reading difficulties evidence less anxiety over time than their non-responding peers (Grills-Taquechel et al., 2011).

Bi-Directional Influences

Many authors assert that both hypotheses may be correct, and it may exist a bi-directional relation between anxiety and achievement. As reported by Grills-Taquechel et al. (2011), Yasutake & Bryan (1995) suggested that negative affective states (e.g., anxiety) could develop in children who experience learning difficulties; and that such

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emotional distress could, in turn, result in continued difficulty learning. More specifically, anxiety may create or increase disruption in students' learning, and this condition over time could lead to decreases in achievement. Consequently, the awareness of falling behind in classes or experiencing school failures may heighten anxiety levels and disturb children's ability to focus, which could further increase their anxiety-related behaviors. Children may find themselves within a vicious cycle in which anxiety and learning difficulties feed each other and worsen over time (Grills-Taquechel et al., 2011).

2.5 Academic success, self-reported learning strategies, and study approaches

The term 'academic success' is one of the most widely used constructs in educational research and assessment within higher education. There are several definitions of student success in the literature. In (Kuh, Kinzie, Buckley, Bridges, & Hayek, 2006), a definition of student success is synthesized from the literature as "Student success is defined as academic achievement, engagement in educationally purposeful activities, satisfaction, acquisition of desired knowledge, skills and competencies, persistence, attainment of educational outcomes, and post-college performance". While this is a multi-dimensional definition, York, Gibson, & Rankin, 2015 gave a definition based on the most important six components of academic success, that are "*Academic achievement, satisfaction, acquisition of skills and competencies, persistence, attainment of learning objectives, and career success*" (Alyahyan & Düstegör, 2020). Specifically, in the following study academic success was investigated by taking into consideration the number of college credits expected from the faculties attended by the participants, the number of college credits obtained, and the arithmetic mean. Next, it has been investigated a possible correlation between academic success and participants' emotional states during exams.

Currently, finding more effective teaching and learning strategies for students with dyslexia presents a challenge for teachers. The multi-sensory approach to the teaching of literacy skills has been developed from the work of Samuel Orton (1989), who was one of the first to postulate the neurobiological basis of dyslexia, and McPhillips (2001), who suggested that dyslexic students can be helped by changing the way they move and

exercise, with special routines tapping into reflexes leftover from birth. In more recent years, much has been written about teaching and learning styles, but the idea of individual learning styles is not new. Indeed, as Exley (2003) precised, it dates back to Plato's belief that all persons differed because each one built his or her knowledge through individual thought and reason; to Aristotle's writing about the mind as an instrument for the body; to Aristotle and Hippocrates, who grouped personality into four types; and to when, by the early 1960s, the characteristics that affected how children learn were identified. These characteristics have later been called 'cognitive styles', and have led on to the concept of individual learning styles. As reported in Exley (2003), Mortimer Mishkin defined cognitive style as an individual's characteristic and relatively consistent way of processing incoming information of all types from the environment. He also suggested that learning style is the application of an individual's cognitive style within a learning situation (Exley, 2003).

The concept of approaches to learning was introduced by Marton and Saljo (1976) and focuses on the interaction between a student and the learning context. It refers to the predispositions and beliefs that students have about learning. Theorists of approaches to learning try to uncover students' understanding of the nature and purpose of learning, which is thought to influence their choice of tactics and strategies, but which is also influenced by the learning context. Students with a deep approach to learning report being motivated intrinsically to learn and trying to comprehend underlying meanings of a learning task. These students usually report using higher order cognitive strategies in completion of tasks. On the contrary, students with a surface approach to learning report being motivated by factors extrinsic to the task and, thus, are less likely to invest the proper time and effort required for a successful completion. Consequently, these students often report using cognitive strategies such as rehearsal of information in order to complete a specific task, which are usually thought by instructors to be ineffective. Studies have demonstrated that a surface approach to learning is associated with poor academic outcomes (Kirby et al, 2008).

As mentioned above, in order to be successful in higher education students not only need to have motivation and sufficient intellectual ability, but also a wide range of study skills as well as the metacognitive ability to determine when a change in strategy may be more useful (Tops et al, 2020). Self-regulated learning (SRL) has emerged as an important

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new construct in education. The current understanding of self-regulated learning has been informed by three schools of thought: research on learning styles, research on metacognition and regulation styles, and theories of the self, including goal-directed behavior. Zimmerman and Schunk (1989) defined self-regulated learning in terms of self-generated thoughts, feelings, and actions systematically oriented toward attainment of students' own goals (Boekaerts, 1999).

According to Andreassen et al. (2017), Zimmerman's model describes three cyclical phases of self-regulated learning: forethought includes planning and selection of strategies appropriate for the task; performance control involves the execution of those strategies; and self-reflection involves judgments and evaluation of strategy use after task performance. According to Zimmerman, self-regulated strategies are purposefully selected cognitive processes and behavioral actions directed at acquiring or displaying skill and knowledge, and appropriately selected and performed strategies are considered to promote academic learning and achievement, particularly in the "unstructured settings where studying often occurs". Study strategies are considered context-specific within self-regulated learning theory, implying that self-regulated students must adjust their strategic choices and activities to different study contexts. For example, undergraduates traverse and negotiate different study contexts involving lectures and self-study as well as social collaboration and help-seeking, with self-regulated study strategies likely to vary with those contexts. Furthermore, self-regulatory competence has little value if students cannot motivate themselves to use it. In particular, perceived self-efficacy, defined as "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (Bandura, 1997), is considered to be an essential source of self-motivation. Accordingly, perceived self-efficacy seems to predict students' planning and selection as well as their execution of strategies in different areas. At the same time, experiencing progress through the use of strategies may enhance perceptions of being self-efficacious (Andreassen et al, 2017).

Self-regulated study strategies are considered to represent goal-directed, intentionally evoked, and effortful processes and actions. On this basis, Andreassen et al. (2017) precised that the resource-demanding difficulties postsecondary students with dyslexia experience in regard to lower-level literacy skills may constrain their academic self-regulation because they tie up cognitive resources that could otherwise be used in strategic

processing. They stated, however, that several studies have suggested that at least some students with dyslexia may compensate effectively for their lower-level difficulties and perform well on academic learning and performance tasks by means of self-regulated study strategies. For example, Bråten et al. (2010), who examined the compensatory mechanisms used by high-achieving secondary school students with dyslexia in a mixed-method study (combining questionnaire and interview data), found that those students tended to self-regulate their learning through deeper-level strategies such as organization, elaboration, and monitoring.They drew on a variety of personal, social, and technological resources to compensate for their poor decoding skills when strategically learning at home and school (Andreassen et al., 2017).

As reported by Andreassen et al. (2017), some studies suggest that students with dyslexia in higher education have a restricted repertoire of self-regulated study strategies, especially trying to avoid reading- and writing-based strategies (Heiman & Precel, 2003; MacCullagh et al., 2017; Mortimore & Crozier, 2006; Olofsson et al., 2012). Moreover, quite a few students with dyslexia have retreated into roles of non-strategic, passive learners (Heiman & Precel, 2003; Stampoltzis & Polychronopoulou, 2009). Other research, instead, indicates that students with dyslexia in higher education employ a broad range of strategies (Corkett et al., 2006; Pino & Mortari, 2014), possibly to try to compensate for their lower-level difficulties. According to Andreassen et al., inconsistent findings may be associated with different criteria used to select participants with dyslexia across studies. In addition, students with dyslexia in higher education may constitute a heterogeneous group in terms of how much they still struggle with basic reading and spelling skills (Fink, 1998; Pedersen et al., 2016).

Kirby et al. (2008) conducted a study on the self-reported learning strategies and study approaches of college and university students with and without dyslexia and examined the relationship of those characteristics with reading ability. The results suggested that postsecondary students with dyslexia have a different profile of self-reported learning strategies and study approaches than their peers without dyslexia. Although the students with dyslexia have partially compensated for their deficits, these results suggest that they still have significant difficulties with implementing learning strategies concerning identifying main ideas in text and preparing for tests. Lower endorsement on these scales is associated with weaker reading performance for students with and without dyslexia.

The authors argued that these problems most likely stem from inefficient and inaccurate word recognition, which in turn is caused by deficits in more fundamental processes, such as phonological awareness and phonological memory. Reading ability correlated positively with selecting main ideas and test taking strategies and negatively with use of study aids. The authors interpreted the learning strategy results as consequences of, and compensations for, the difficulties that students with dyslexia have in word reading (Kirby et al, 2008).

One of the aims of the study here presented is to investigate the difference in the study strategies adopted by young adults with SLDs, and in particular with young adults with reading difficulties that are currently attending university.

Chapter III – Reading, comprehension and reading effectiveness

3.1 Reading

Reading is one of the most complex and uniquely human of cognitive activities. The term 'reading' refers to a complex cognitive process in which the reader's mind interacts with a given text, these two elements are also influenced by context and social factors. Knowing how to read means being able to decode and understand the meaning of the words that constitute a text and at the same time understand them and integrate them with one's prior knowledge in such a way such a way as to facilitate the achievement of set goals (Angelini, 2010).

Reading needs the use of multiple cognitive processes (Santulli & Scagnelli, 2019) and can be distinguished in reading as decoding on a phonological basis and text reading aimed at comprehension. Cognitive psychology views reading as an information processing activity: reading aloud is transforming print into speech, and reading comprehension is transforming print into meaning (Coltheart, 2006).

In today's society, reading plays a fundamental role in the growth of the individual as it constitutes one of the central themes in the pedagogy of education, as a fundamental skill for being an active participant in society, allowing access to all knowledge. For centuries only privileged people could actually read, because for the majority of the population knowing how to read was not a necessity (it was indeed quite disadvantageous), and reading became an instrument of power that only the wealthier classes could wield. Later, with the aim of spreading Christianity, the Church decided to encourage literacy, and about 20 percent of the adult population Europe finally took up reading. However, despite this change, literacy on a large scale would not occur until later with the introduction of the school system (Pearson and Hamm, 2005).

3.2 Cognitive skills implied in reading

Competent reading implies the use of both language and cognitive skills. The former refers to knowledge that concern vocabulary, syntactic structures, pragmatic structures, and textual knowledge. By contrast, cognitive skills are related to the ability to use strategies that improve and control cognitive processes. Among the cognitive skills which play a key role in reading and text comprehension, there is the activation of prior knowledge which helps to select the main information within a text and to unite the new content of the latter with the reader's prior knowledge (Cottini, 2011).

Another important component in understanding a text are the emotional factors that can interfere with cognitive skills in a negative or positive way. In this regard, the *locus of control* refers to the point at which the subject attributes their success or failure to internal or external factors, thus determining the way she or he will approach the task. The most functional style for achieving one's goals is to think that success is due to one's own personal commitment.

Among the emotional components, the perception of self-efficacy, i.e. the perception that an individual has of his or her own competence in carrying out a given task, is one of the elements that contribute to the structuring the learner's self-esteem, which can be described as the set of values and feelings one has for many aspects of one's own person (Santulli e Scagnelli, 2019; Cottini, 2011). Self-esteem and self-efficacy influence the motivation of individuals; in fact, good self-esteem leads to greater motivation and allows one to perceive an ideal self-efficacy for carrying out a task. Often emotional difficulties, such as low self-esteem or self-efficacy, are linked to the presence of learning disorders; in fact, those who perceives greater difficulty in performing certain tasks and achieves less success than their peers start to devalue their self-image. Furthermore, emotions can impact processes of reading as well as resulting outcomes, including knowledge acquisition, conceptual change, and attitude change (Pekrun, 2021).

A further essential component in the reading comprehension process is the working memory that holds information for a short period of time that is taken in and then processed further by other cognitive processes. It also plays an important role in reading as it contributes to the development of phonological awareness. In fact, reading involves the processing and recognition of graphemes and phonemes and therefore it is necessary

to possess a good phonological awareness that allows one to memorise, and then recognise, the association between sounds and written signs (Coltheart, 2006; Santulli & Scagnelli, 2019). Research has shown how deficits in working memory influence learning disorders such as dyslexia. Some dyslexic subjects, in fact, present difficulties in decoding graphemes because there is an overload in working memory that leads individuals to an enormous mental effort (Fostick & Revah, 2017; Smith-Spark & Fisk, 2017).

3.3 Text Comprehension

Reading comprehension has been defined as the ability to extract and obtain meaning from a written text for a specific reason (Vellutino, 2003). This ability is crucial and, therefore, a widespread goal for learning in school, especially in the late elementary grades (Sweet & Snow, 2003).

As Gernsbacher & Kaschak (2013) pointed out, the use of language permeates our existence. We spend all of our waking moments engaged in some kind of linguistic activity (writing e-mail, having conversations with friends, running through thoughts in our heads). In these situations, language is almost always experienced in portions larger than single words or sentences. In most cases the comprehension of language requires not just understanding the meaning of the individual words or sentences, but also the integration of the meaning of those words or sentences into a larger understanding of what is being talked or read about. The processes involved in comprehending these larger units of language (stories, newspapers, articles, conversations, etc.) have been studied in some detail over the past several decades (Graesscr, Gernsbacher, & Goldman, 2003).

Text comprehension is a complex cognitive activity, and is of great importance as it fosters people's intellectual growth and social inclusion. Cognitive psychology considers text comprehension as the process of transforming written text into meaning; its aim is to understand the nature of the mental information processing systems that people use to perform these transformations (Coltheart, 2006). The mechanisms involved in the comprehension process (verbal protocols, probe response measures, reading time

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measures, and brain activity measures) has been investigated through a broad range of research metodologies (Gernsbacher & Kaschak 2013).

In order to comprehend what they are reading, readers need to establish a representation to keep track of the events in the story. They also need to draw on their knowledge of the world to draw inferences that fill the blanks of the components of the situation that are not explicitly described. Finally, readers have to monitor the information that is presented in the text to make sure it is coherent with the representation that they have constructed based on the previous sentences (Gernsbacher & Kaschak 2013). Moreover, readers constantly modify or update the content of the situational model by integrating each new word and phrase so as to make it more appropriate to the context (Kintsch, 1998).

Comprehension ability is influenced by the characteristics of the reader (linguistic and cognitive abilities, and their knowledge), the characteristics of the text (its structure, content, and degree of textual cohesion and coherence) and the final purpose of the reading itself. This last element is essential as it allows us to conceive reading as a means to search for information and integrate notions drawn from different sources. Text comprehension is successful when the three elements interact (Van den Broek & Kendeou, 2017).

3.4 The SuperReading course

Study participants were given a reading test in order to investigate their reading ability and text comprehension, how the comprehension results varied, and what effect did this variable have on reading effectiveness in order to find correlations with emotional states. The texts chosen ("Neve Nera" and "Storia dell' Arco Lungo") were selected from a sample of tests used in the SuperReading course, which aims at promoting a strategic approach to reading.

The SuperReading course was developed in the US by Ron Cole. His goal was to make its customers more successful through the strengthening of reading skills. Since in the mid-1990s existing speed-reading programmes did not guarantee adequate

comprehension levels, he developed new techniques and merged them in a course that he offered to his clients, which were mostly adult managers (Cole, 2009). Good reading skills for those who worked in the field of economics was necessary to have a daily and in-depth update of the working environment itself. For this reason, Cole put in place a training course that offered effective strategies to make reading more fluent and faster and, at the same time, enabled his clients to improve their comprehension and memorisation of the information contained in the texts (Santulli and Scagnelli, 2019).

In Italy, the first SuperReading course was held by the IULM University in 2016, which decided to enhance the method of training in order to propose it to the students, also involving the diversaMENTE service that deals with students with disabilities and SLDs (Santulli and Scagnelli, 2019).

The course takes into consideration fundamental skills for university study, which can be problematic for any student and are, in particular, specifically impaired in individuals with SLDs. Metacognition plays a crucial role in crucial role in learning and in the understanding of texts (Hulme and Snowling 2009; Oakhill and Cain 2012; Carretti et al., 2014; Medina, Castleberry and Persky, 2017), while less competent readers are those with fewer strategies metacognitive strategies (De Beni and Pazzaglia 1997; Butler, 1998; Klassen, 2002; 2006; De Beni and Pazzaglia 2003; Giasson, 2003; Mason and Mason, 2005; Job and Klassen, 2012). As Scagnelli et al., (2018) reported, metacognition refers to the set of skills that enable the individual to reflect on his or her own cognitive functioning (Flavell, 1979), i.e. the ability to observe, monitor and check the progress of one's mental activity. Many authors support the importance of cognitive skills in achieving success in learning (Pressley, 2000; Pressley & Gaskins, 2006; Hacker, Keener & Kircher, 2009; Williams & Atkins, 2009; Vanderswalmen, Vrijders & Desoete, 2010) and several studies have shown that metacognitive skills influence performance in reading and text comprehension tasks (Anderson & Ambruster, 1984; Hacker, Dunlosky & Graesser, 1998; Roeschl-Heils, Schneider & van Kraayenoord, 2003; Baker & Beall, 2009).

The course relies on the fundamental principles of metacognition (Wray, 1994) and on the analysis of the variables that influence comprehension (Ellis, 1993). At the same time, the course takes into consideration the emotional and motivational components, and includes a special reading practice, named *eye-hopping* (Scagnelli & Santulli, 2022).

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The course's standard format comprises 6 sessions of from 2 hours 30 minutes to 3 hours each, over a period of 9 weeks, with 18 hours of classroom attendance and a daily exercise commitment of at least 20 minutes. The course is led by a coach, who illustrates and comments on the different techniques used to motivate and support the participants, and establish a positive environment for learning and practice (Angel & Amar, 2005). SuperReading aims at making participants aware of their own cognitive skills, and at the same time to teach them techniques to improve their reading skills. During the course participants work mainly on three areas: metacognitive strategies, which play a crucial role in learning and studying, the emotional components, which influence task performance, and finally they focus on input recognition (Scagnelli et al., 2018; Scagnelli & Santulli, 2022). The distinguishing feature of SuperReading is eye-hopping, a training technique that can be practised both during sessions and at home as homework. Reading texts are printed in close columns, each of which contains from 2 to 5 words; readers must 'hop' with their eye from the middle of one column to the middle of the other, following the movement of their index finger. The practice starts with 2-word columns, moving to a higher level as soon as the exercise is performed at an acceptably high speed (Scagnelli & Santulli, 2022).

To date, 12 different editions of superReading have been offered and three are currently in progress. The first phase of the research consisted of evaluating the efficacy of the course using tests on a sample of 156 students (93 diagnosed with SLDs and 63 normolectors), who participated in the first 12 editions of the Italian course. Statistically significant improvements were found in all the parameters considered (time, comprehension and efficacy). On the basis of these results, a study was then conducted to independently verify these data by administering a battery of tests designed specifically for diagnosis in adulthood: BDA 16-30, *Battery for the Diagnosis of Dyslexia, Dysorthography, Comprehension Disorder in Adolescence and Adulthood* (Scagnelli et al., 2018). The study reported that the improvement recorded in the superReading tests was also confirmed when administering the BDA 16-30 (Scagnelli et al., 2018). The results show that the participation in the course leads to significant improvements in reading performance, both in terms of time spent and text comprehension. All the measures considered for the analysis statistically significant improvement with an effect size ranging from medium to high (Scagnelli et al., 2022).

3.5 A new parameter: reading effectiveness

The SuperReading course, in addition to trying to make an improvement in the participants' reading skills, introduces a new synthetic parameter that combines speed and comprehension: reading effectiveness (RE). This parameter allows us to have a clearer and more detailed representation of the performance as it gives us the opportunity to notice what happens during the first reading, the second reading, and it also highlights all the time taken to read the text and reach the final comprehension.

Efficiency in basic reading processes can be discussed in terms of accuracy and speed. Theories and research of reading effectiveness contribute to our understanding of the phases involved in the development of word recognition speed and accuracy, as well as to our understanding of the relative processing efficiency of letters, isolated words, inflected words, and connected text (Geva et al., 1997). As reported in Scagnelli et al., (2022), to date there is a great deal of research regarding the development of reading comprehension skills in childhood, but there is a lack of equally in-depth research for adulthood. With regard to the availability of psychometric instruments for the assessment of reading skills, the publication of batteries for the assessment of reading and comprehension skills in adulthood is relatively recent, since the first tests for adulthood in Italian are the batteries BDA 16-30 (Ciuffo et al., 2019) and the LSC-SUA (Cornoldi, Montesano & Valenti, 2020). Even more limited are the proposals for enhancement interventions (Simmons & Singleton, 2000; Tops et al., 2012; Angelini et al., 2015). Furthermore, research has focused more on the study of reading by separating the decoding component from the comprehension component, thus ignoring the fact that the primary purpose of reading is the acquisition of new knowledge and text comprehension. Finally, the increased focus on reading aloud has led to neglecting silent reading, which represents the preferred mode from the end of primary school onwards (Fuchs et al., 2001).

Indeed, although most readers read silently, in Italy tests to assess the degree of development of reading skills are based on reading aloud, as in such a way reading effectiveness is easier to monitor and assess. On the other hand, skills in the area of silent reading are more difficult to investigate as they cannot be directly observed; this could be the reason why the results in this specific area are inconsistent (Santulli and Scagnelli,

2019). However, the silent reading mode is used by the majority of adult readers. In fact, while in the early stages of learning oral reading is mainly preferred, as children grow oral reading gives way to silent reading, which gradually replaces reading aloud almost completely (Santulli & Scagnelli, 2022).

The reading effectiveness parameter thus allows to integrate the two components of decoding and comprehension, and makes it possible for participants to be assessed in a condition that is more similar to what they would face if subjected to any kind of reading and comprehension test. The parameter also considers how much time was spent on the reading part.

Chapter IV - The present study: data and results

4.1 Background and aim

In current research on the various aspects of reading, adult readers in general, and adult readers with a diagnosis of SLDs, have rarely been taken into consideration. In Italy, reading abilities have been usually investigated separating *decoding* from *comprehension*, while in the United Kingdom there are test that unite them. The Anglo-Saxon and Italian authors Scagnelli, De Beffa, and Santulli have demonstrated the advantages of integrating reading speed and comprehension into a single parameter, reading effectiveness (RE), which gives a better understanding of the reader's profile, and is also more synthetic.

Furthermore, reading and comprehension are complex skills that are both influenced by emotions. In addition to reading and comprehension, emotions also affect the academic performance. Against the background of a limited amount of research devoted to studies on reading skills in adults with specific learning disorders, and more generally on the emotional experiences of young adults with specific learning disorders, the goal of the present study is to investigate the correlation between emotional aspects and academic success, and between emotional aspects and performance given in reading tests that measure both reading speed and comprehension. To investigate reading skills, it has been decided to use the reading effectiveness parameter introduced by the SuperReading course, which allows to integrate both reading speed and comprehension into a single parameter.

The following chapter will present the data collected, starting with a description of the participants and the materials used, followed by a statistical analysis of the results obtained. Specifically, the analyses and comparisons reported in this thesis will only be carried out with regard to the group of female participants, as there are only two male participants, and therefore cannot be of statistical significance.

4.2 Method

4.2.1 Participants

The population analysed for this research consists of 20 subjects aged between 21 and 30 years with a diagnosis of SLD. The average age is 24. In the sample there are 2 males and 18 females. Data from female study participants were analyzed quantitatively, while data from male participants have not been taken into consideration because of the small number of the sample.

Nine participant are attending a Bachelor's degree course, while eleven are attending a Master's degree.

All participants responded to a public announcement and signed an informed consent, authorising the use of personal data, questionnaire data and the results of their reading performance for research purposes.

4.2.2 Measures

The present study investigated the following parameters: reading effectiveness, academic success, and emotional aspects.

Participants were administered a reading test and a questionnaire on their academic success, emotional experiences, self-concept, self-efficacy, self-assessment of soft skills and learning strategies. The reading test and the questionnaire were conducted online on the same day. Besides the questionnaire on emotional states, there was also a part dedicated to collecting basic anamnestic information (gender, age, and possible diagnosis of SLDs), a question asking if the subject had attended the SuperReading course, and a part functional to obtain a measure of academic success (degree course in which the subject is enrolled, in course/off course status, exam numbers for the first/second/ third year, number of exams taken, number of ECTS obtained, average grade, both arithmetic and weighted).

4.2.2.1 Test Anxiety

Anxiety is a multidimensional construct including cognitive, physiological, and behavioral components. In performance anxiety (also called test anxiety), the cognitive aspects consist of concerns related to low self-esteem, the perception of not being sufficiently prepared for the performance, the assessment of the importance of the exam and the resonances it may have on relationships with peers, family, etc. (Grills-Taquechel et al., 2012). Liebert & Morris in 1967 made a distinction between *worry* (cognitive concern) and *emotionality* (arousal or psycho-physiological activation). According to Sarason (1984) the *worry* aspect is general preoccupation from intrusive thoughts unrelated to the task, while *emotionality* includes tension and physical symptoms.

Test anxiety has been measured using the Exam Ansiety test, which involves two different measures: worry (or cognitive concern about performance) and emotionality (or autonomic arousal to the test situation), and includes 18 items selected by the authors among a sample of 47 items (Morris, Davis & Hutchings, 1981). These items had been taken from the test developed by Liebert and Morris (1967), and were then reduced to 10. Further 8 items were then included in this version, based on a factor analysis conducted on 160 subjects. (Di Nuovo & Magnano, 2013).

In this test, gender differences are highly significant in each measure (especially emotionality), and justify separate evaluation. The following test aims to investigate the anxiety experienced by students during their exams. The two aspects investigated are emotionality, which is related to tension and somatic symptoms, and worry, which refers to general preoccupation with intrusive thoughts unrelated to the task. The aim of administering this test was to analyse exam anxiety and compare it with both academic success and reading effectiveness, to see whether there was a correlation and exam anxiety values affected academic success and reading effectiveness.

4.2.2.2 Self-assessment of soft skills

Self-assessment of one's competences is an example of the transversality between the possession of skills and abilities (assessable by objective tests) and their subjective perception, which is influenced by motivational and emotional factors (Di Nuovo & Magnano, 2013). The ability to self-assess is crucial to ensure the self-confidence needed to proceed confidently and efficiently in school and academic learning. This ability is closely linked to self-esteem, self-efficacy, and motivation. Self-assessment skills cover aspects related to:

1. Time organization;
2. Exploration of new aspects of reality;
3. Perseverance;
4. Willingness to confront other people's ideas;
5. Ability to communicate correctly;
6. Ability to work in group;
7. Agility, motor and sport competence;
8. Musical talent;
9. Manual skills;
10. Numeracy and writing skills;
11. Working speed.

All these abilities are transversally connected with learning and, in the individual person, with the aptitudes that through them are made explicit and made possible for effective learning.

The self-assessment test consists of 13 items on a scale from 0 to 10, analogous to school grades; values 8, 9 and 10 could be used only once (Di Nuovo & Magnano, 2013). Participants had to indicate, for each item, how much they felt able to perform the presented activity on a scale from one to ten. The test aims to investigate the participants' self-assessment of the skills described above. Again, the aim was to investigate whether self-assessment of soft-skills can be correlated with, and influence, academic success and reading effectiveness.

4.2.2.3 Concept of Self

The *semantic differential* (SD) is a measurement scale for ascertaining the representation of concepts by analysing the subject's semantic and affective-emotional universe. The technique derives from the psycholinguistic studies of Osgood and colleagues (1957), and aims to quantify the connotative meaning of language from the cognitive and affective reactions elicited by a concept-stimulus. The subject must explicate his associative response to the stimulus by differentiating this response on a set of bipolar antinomian adjective scales ('polar' or 'qualifiers': e.g. strong-weak, aggressive-pacific), chosen for the possibility of a metaphorical valence, capable of stimulating connotative rather than denotative meaning (Di Nuovo & Magnano, 2013).

The subject is asked to make two interrelated types of judgements: one concerning direction (which of the two opposite poles he or she feels the association is closest to), the other concerning intensity (how close to the extreme end of the scale it is). This distance is quantified on a seven-degree scale, with a midpoint corresponding to the total equidistance, or neutrality, of the two polar subjects in relation to the concept-stimulus (Di Nuovo & Magnano, 2013).

Three main parameters have been analysed: *E* (energy, dynamism), *A* (positive affectivity), and *S* (emotional stability). *E* expresses the perception of oneself as an active person towards life, endowed with the ability to sustain this orientation with decision and strength. The person with a high score in this factor has considerable inner security and presents him/herself to others as lively, exuberant, attractive in his/her confidence and expansiveness. Low scores characterise the person as tending to be insecure and passive, with limited confidence in their own abilities (Di Nuovo & Magnano, 2013).

High scores in the parameter *A* express a perception of oneself as a person capable of feelings and affections that foster a satisfying relationship with others: tolerance, openness and altruism, and a warm and sincere attitude are the dominant traits that enable good intimacy in interpersonal relationships. Low scores, on the other hand, characterise a person who is aggressive, complicated, self-centred and therefore difficult to achieve real emotional openness (Di Nuovo & Magnano, 2013).

S represents the perception of an emotional set-up characterised, on high scores, by calm, tranquillity, inner order and reflexivity. At the opposite pole, low scores indicate a person

who knows that she or he is unstable, emotionally disordered, tends to lose calm and manifest emotions in a poorly controlled manner (Di Nuovo & Magnano, 2013).

The purpose of the present test was to investigate the possible correlation between self-concept, academic success and reading effectiveness.

4.2.2.4 Self-efficacy

Self-attributions are the explanations a person gives regarding the results of their actions; underlying these explanations is a series of conceptualizations concerning oneself and one's relationship to the world and the events that occur in it. Attributions may vary in internality, stability, and controllability: if you believe that specific positive results of behavior are due to your ability, you will have a system of internal attribution (concerns themselves), stable (the ability is a permanent characteristic), high controllability (through your ability you can control events) (Di Nuovo & Magnano, 2013).

Perceived Self-Efficacy test, created by Schwarzer in the 90s, aims to assess a construct defined by the author himself as a set of optimistic beliefs about coping with a wide variety of stressful stimuli and dealing adequately with challenging situations. The original version developed in 1981 consisted of 20 items and has later been reduced to half. The test administered to study participants consists of 10 items on a scale from 0 to 10 (Di Paolo & Magnano, 2013). The test is designed to investigate the level of self-efficacy of the participants in the study, i.e. the belief in their abilities to organize and carry out the course of action necessary to adequately handle the situations they will encounter to achieve the desired results (Bandura, 1977; 1996). On a scale of 1 to 10, participants had to rate how capable they felt they were of doing what was described in the item. Since self-efficacy is the ability to cope with a wide variety of stressful stimuli and to deal with challenging situations, the test items mainly focused on problem-solving, achieving one's goals, and, more generally, the ability to react when facing difficult situations. Participants were asked to answer as quickly and truthfully as possible.

4.2.2.5 Academic success

Participants were asked questions to assess their academic success. Among the questions asked there were the degree program in which the participant was enrolled, the year of enrollment and whether s/he was currently in or out of the university prescribed time, whether he/she was a working student, what year he/she was attending, the number of exams scheduled for the first, second, and third year, the exams scheduled in total for the degree program, the exams taken so far, the exams passed, the ECTS obtained, and the arithmetic mean and weighted arithmetic mean obtained. Academic success was calculated by multiplying the number of ECTS earned by their average grade, divided by the number of ECTS they could obtain within the year they were enrolled. Academic success was calculated to be compared with emotional aspects and reading effectiveness.

4.2.2.6 Self-reported learning strategies

The learning strategies questionnaire (QSS) highlights which learning strategies are considered to be useful and which are used by people. Its usefulness stems from the observation that good students do not limit themselves to passive assimilation of content but implements strategies for better processing and fixing in memory. The questionnaire presents 39 learning strategies and asks the participant to rate - on a scale of 1 to 7 points - how important he/she considers them to be and how much he/she uses them. The sum of the importance ratings initially assigned provides an overall index of strategic attitude, i.e., of belief in the effectiveness of using strategies. Each of the two phases require about ten minutes (De Beni et al., 2014).

The QSS was developed by Cornoldi (1995) to identify students' metacognitive beliefs concerning learning strategies. In the present form, it allows the evaluation of three indices relating to the evaluation of efficacy, the evaluation of the use of learning strategies, and the inconsistency between these two evaluations (De Beni et al., 2023).

The parameters that will be evaluated are: effectiveness evaluation, use evaluation, and strategic inconsistency. The first measure refers to the participant's beliefs about the effectiveness of the learning strategies used by an ideal student. These beliefs represent a

form of metacognitive knowledge about the usefulness of study procedures and constitute the ideal student's self. The second index measured collects some estimates of one's own personal use of strategies. These refer to the student's real self, i.e. how he or she perceives his or her approach to studying. While answering these questions, the subject is invited to dwell on what he or she does while studying. Different metacognitive levels may influence these evaluations, so truly ineffective students may overestimate their personal use of specific strategies and not discriminate between more and less effective ones. Conversely, more strategic students might need to be more parsimonious in their evaluations and underestimate their actual use. The instrument, therefore, does not measure the actual use of strategies but a metacognitive component given by the subjective estimation of strategic use (De Beni et al., 2023).

The gap between the evaluation of effectiveness and actual use is called *strategic inconsistency*, and reflects the student's inability to use the strategies considered as most valid and not to adopt those he or she considers less effective. In the context of self-assessment, strategic inconsistency represents the distance between the real and ideal selves. A large discrepancy between these two representations tends to create feelings of disappointment and dissatisfaction (De Beni et al., 2023).

4.2.2.7 Reading effectiveness

In order to investigate reading ability and text comprehension, two specific tests ("Neve Nera" and "Storia dell arco lungo") were selected to investigate reading speed, comprehension and reading efficiency (a combined parameter of speed and comprehension) and are taken from the tests selected for the superReading course, that aims to promote a strategic approach to reading.

The tests used were designed to be as similar as possible, both in terms of content and length and in terms of the type of questions (completions, requests for dates and names, etc.), to those used by Ross Cooper, a psychologist at the LLU+ (Language and Literacy Unit) center at the South Bank University in London, where, starting from 1998, the SuperReading course was proposed. The tests consist of reading a 400-word passage,

after which participants have to answer ten very specific open-ended questions about the content of the passage. A second reading is then carried out with final answers to the same questions. When answering, participants could no longer recheck the text.

The participant's performance has been automatically timed. Reading times (first reading, second reading and total) and comprehension percentage (first and second reading) have been recorded. The two parameters are then combined in an index called reading efficiency (RE) which is calculated for the first reading, for the second reading and then considering both (total RE) (Scagnelli et al., 2018) according to the following formula:

$$RE = \left[\frac{W * C}{100} \right] / \text{T}$$

W = total words

C = text comprehension

T = reading time

Wrong or not given answers are awarded 0 points, answers with exactly the same meaning as the one given in the in the test solutions are worth 10 points, while 5 points are awarded in the case of a partially correct answer (i.e. when the participant use a synonym of the correct answer). In addition, if after the second reading the answer given is more precise, the first answer is awarded 5 points and the second is worth 10 points.

The parameter reading effectiveness was compared with emotional aspects and academic success to see if there was a correlation, to see if emotional aspects could influence reading effectiveness, and if academic success was somehow related to reading effectiveness. The main purpose of the present study was indeed to investigate this possible correlation.

4.3 Results

The introduction to this study outlined two research questions. To answer these questions, the following analyses were conducted using SPSS (Version 29.0.1.0):

- Descriptive statistics were examined to ascertain the the average scores obtained in the tests administered, and the standard deviation;
- Correlations were calculated to determine the relationship between the measures of emotional aspects, reading effectiveness and academic success.

Finally, the individual items of the different tests were analysed in order to analyse in which areas participants had obtained higher or lower scores.

The results of the study population (N=20) obtained during the administration of the two tests are presented below. Female sample data (N=18) were analysed quantitatively, while male sample data, given the low number (N=2) have not been taken into consideration.

4.3.1 Test anxiety

As it can be seen from Fig. 1, as far as test anxiety is concerned, female participants achieved an average *emotionality* score of 27,66, while, according to Di Nuovo & Magnano, the standardized average is 30,30. In this case, the standard deviation is 7,717. The item of the emotionality parameter that has got the higher score is: "Tension upsets my stomach" (average score 3,55). The items with the lowest score are "I feel panicked" (2,5) and "I feel upset and uncomfortable" (2,55). One participant stands right on the critical threshold (37>).

Female participants registered an average *worry* score of 29,77, while the standardized average is set at 27,71. In this case, it can be seen that female participants show a slightly above-average level of worry. The standard deviation is 8,748. In particular, the item of the worry parameter in which it has been recorded the highest scores is: " I feel that I will not perform as well as I could" (average score 3,66). The item with the lowest score is "I

think others will be disappointed with my performance" (2,61). Four participants out of 18 exceeded the critical threshold (34>).

Participants scored above average for both the worry and emotionality parameter. Students with exam anxiety perform worse in school, especially when it comes to complex tasks (Di Nuovo & Magnano, 2013).

Figure 1 below shows the average scores of the study population compared with the standardized averages of the normative population.

Fig. 1 *Results of the female population to worry and emotionality compared with the standardized scores of the normative population*
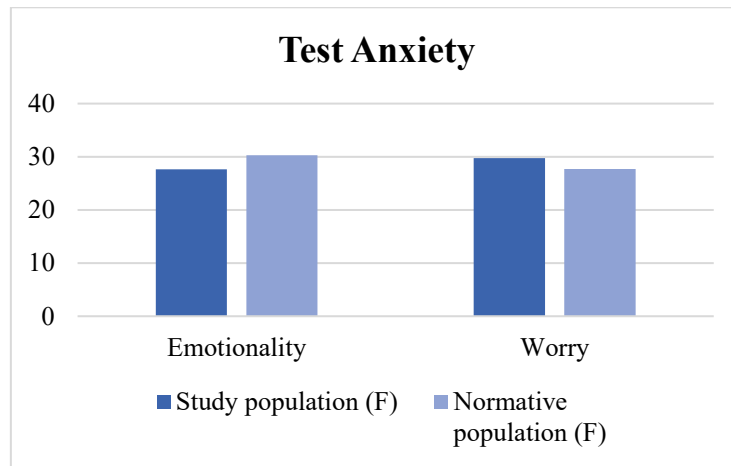
Table 1 shows the average scores recorded for each individual test item in order from highest to lowest score. Among the items that scored highest (>3,5) there are: "I feel that I will not perform as well as I could", "It seems to me that others are better prepared than me", "Tension upsets my stomach". Two items out of three refer to the worry parameter. Indeed, it can be seen that most of the items related to the worry parameter scored higher on average than the items related to the emotionality parameter.

Tab. 1 *Scores obtained by the population on the individual items of the 'exam anxiety' test*

During an exam…	Average score
I feel that I will not perform as well as I could (W)	3,66
It seems to me that others are better prepared than me (W)	3,61
Tension upsets my stomach (E)	3,55
I am very nervous (E)	3,44
I lack confidence in myself (W)	3,44
I am afraid I am not prepared enough (W)	3,38
I am afraid that the test may cover some subject I have not studied (W)	3,34
I think I should have studied harder (W)	3,33
I feel very anxious (E)	3,27
I think of the consequences if I fail the test (W)	3,16
I feel extremely tense (E)	3,16
I have no confidence in how I will perform in the test (W)	3,05
I feel shaken by fear (E)	3
I feel my heart beating fast (E)	3
I feel overexcited (E)	2,83
I think others will be disappointed with my performance (W)	2,61
I feel upset and uncomfortable (E)	2,55
I feel panicked (E)	2,5

E= emotionality

W= worry

4.3.2 Self-assessment of soft skills

According to Di Nuovo & Magnano, the standardized average for self-assessment of soft skills of females attending highschool and university is 6.46. The criticality level for women is below 5,92.

On average, female participants scored 5,93, which is below average and just above the criticality level. The lowest score recorded is 3, the highest is 7. The standard deviation is 0,962. Five participants out of 18 recorded an average score below the critical threshold (<5,92).

The lowest scores, showing the activities in which participants feel least competent, were recorded in: "To be proficient in calculation" (3,88) and "To be musical" (4,27). The highest scores, demonstrating the tasks in which participants feel most competent, were recorded in: "To be able to understand others' opinions" (7,61) and "To explore new things" (7,11).

Below, figure 2 reports the above-mentioned values of the study population in the soft skills self-assessment test.

Fig. 2 *Results of the female population to self-assessment of soft skills and standardized scores of the normative population*
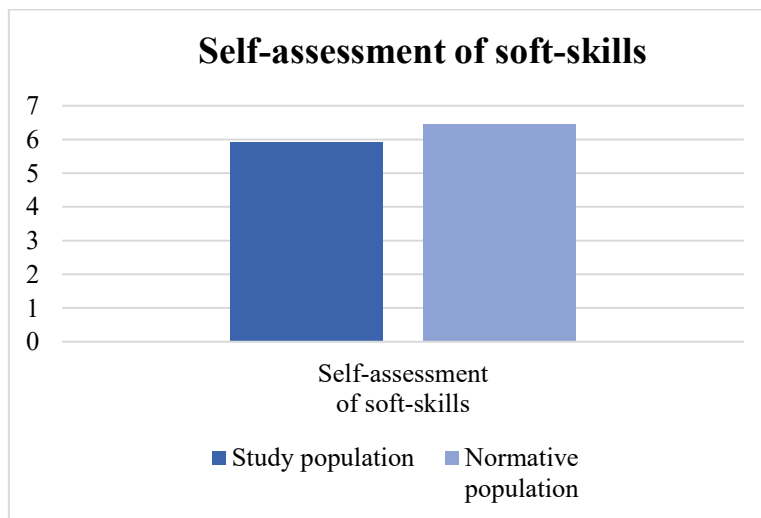
Table 2 shows the average of the study population's scores on the individual items of the self-assessment of the soft-skills. The scores were sorted in order from highest to lowest. At the top of the table, therefore, there are the items in which the study participants felt most capable. These include: "To undestand other's opinions", "To explore new things", "To be willing to confront others' ideas", "To work in a team", "To be skilled in manual work" and "To express myself correctly". At the bottom of the table, instead, we find the items for which participants felt less competent. Among these we can see: "Being proficient in calculation", and "To be musical".

Tab. 2 *Scores obtained by the study population on the individual items of the self-assessment of soft-skills*

Items	Average score
To understand others' opinions	7,61
To explore new things	7,11
To be willing to confront others' ideas	6,83
To work in a team	6,66
To be skilled in manual work	6,66
To express myself correctly	6,44
To organize time	5,61
To do not leave a job or a commitment unfinished	5,44
To be agile and athletic	5,38
To write well and easily	5,27
To perform a task quickly	5,05
To be musical	4,27
Being proficient in calculation	3,88

4.3.3 Concept of self

As far as general self concept is concerned, three main parameters, that have been previously explained, were analysed: E (energy), A (positive affectivity) and S (emotional stability).

Female participants scored an average of 4,90 in the *E* factor, which is below the standardized average (5,36) but above the critical threshold (<4,79). The lowest score recorded is 3,42, which is below the critical threshold. The highest score is 6,28. The standard deviation is 0,758. Six participants scored below the critical threshold.

As far as factor *A* is concerned, female participants achieved an average score of 5,20. In this case, as reported by Di Nuovo & Magnano (2013), the standardized average is 5,25 and the critical threshold is <4,92. The score reached by the participants is therefore slightly below the average, but above the critical threshold. The lowest score recorded is 3,5, while the highest is 6,08. It is relevant to hightlight that six participants out of 18, a third of the sample, scored below the critical threshold. The standard deviation is 0,477.

Finally, female participants scored an average point of 3,93 on the *S* parameter. In this case, the standardized average reported by Di Nuovo & Magnano is 4,90, while the critical threshold is <3,63. Although the data found is below average, it still remains above the critical threshold. The lowest score was 2,75, the highest 4,75. It is worth noting that 5 participants out of 18 registered a score below the critical threshold, and only one participant achieved the average score reported by Di Nuovo & Magnano. The standard deviation is 0,604.

Below, figure 3 illustrates the averages of the study population compared to the standardized averages of the normative population reported in Di Nuovo & Magnano (2013).

Fig. 3 *Concept of self: the female study population and standardized score of the normative population*
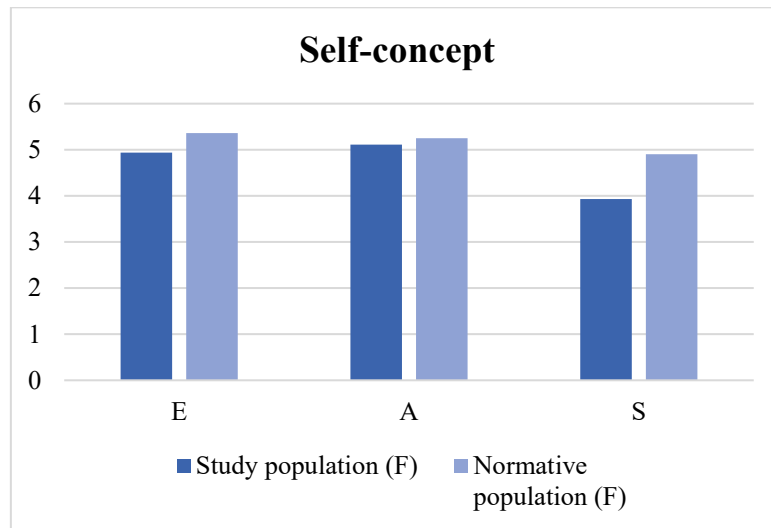
Below, table 3 reports the scores obtained by the study population on the individual items of the self-concept test. Given two pairs of mutually antonymous adjectives, the participants had to indicate for each of them which element of the pair they identified with most, and in what intensity.

Scores range for each scale from 7 to 1: 7 represents the maximum value of the positive pole, 1 represents the minimum value of the negative pole. The number 4, on the other hand, represents a neutral value halfway between the positive and negative poles. Table 3 shows the individual adjective pairs and the average scores obtained from the study population. The scores are organized in descending order.

Tab. 3 *Scores obtained by the study population on the individual items of the self-concept test*

Items	Average score	Items	Average score
Sincere/insincere (A)	6,72	*Expansive/reserved (E)*	5
Deep/superficial (A)	6,16	*Undesirable/desirable (E)*	4,77
Unfair/fair (A)	6	*Insignificant/important (E)*	4,77
Selfish/altruistic (E)	5,83	*Cold/warm (A)*	4,55
Coherent/incoherent (S)	5,77	*Calm/agitated (S)*	4,5
Capable/incapable (E)	5,77	*Fragile/resilient (E)*	4,38
Immature/mature (S)	5,72	*Unstable/stable (S)*	4,33
Energetic/apathetic (E)	5,66	*Fast/slow (E)*	4,16
Efficient/inefficient (S)	5,66	*Undecided/decided (E)*	4,16
Independent/dependent (E)	5,61	*Diffident/trusting (A)*	4,05
Soft/hard (A)	5,38	*Pessimist/optimist (E)*	3,77
Tolerant/intolerant (A)	5,38	*Insecure/secure (E)*	3,61
Reflexive/impulsive (S)	5,2	*Aggressive/serene (A)*	3,38
Satisfied/unsatisfied (E)	5,16	*Simple/complicated (A)*	3,38
Entertaining/repugnant (E)	5,11	*Relaxed/nervous (S)*	3,22
Strong/weak (E)	5,05	*Messy/tidy (S)*	3,22
Active/passive (E)	5	*Anxious/quiet (S)*	2,55

E= energy

A= positive affectivity

S= emotional stability

4.3.4 Self-efficacy

As far as self-efficacy is concerned, female participants registered an average score of 35,22. The data reported in Di Nuovo & Magnano indicates that the standardized average for females attending highschool and university is 37, while the critical threshold is <33. In this case, the participants are below average but above the critical threshold. Five participants out of 18 scored below the critical threshold. The lowest score is 10, which

is well below the aforementioned threshold. The highest score is 40. The standard deviation is 8,292.

Figure 4 reports the average self-efficacy scores compared between the study population and the standardized scores of the normative population.

Fig. 4 *Self-efficacy scores of the study population and standardized scores of the normative population*
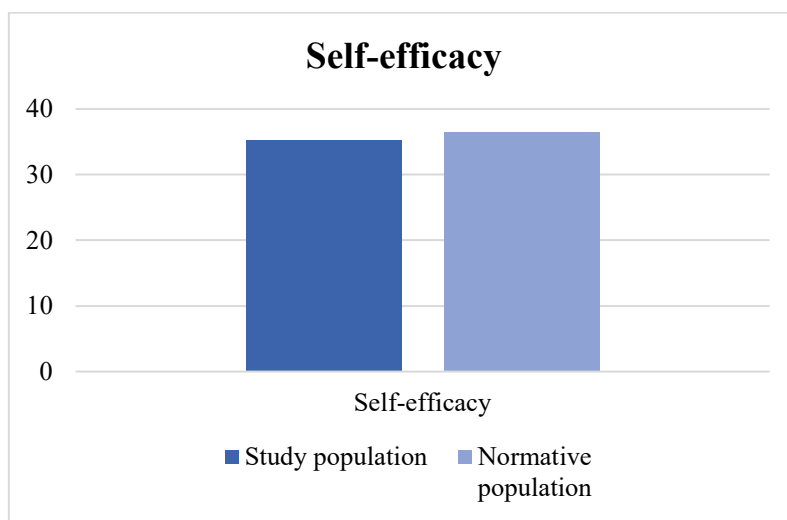
Below, in table 4, are presented the scores given to the individual items of the self-efficacy test. The scores were ordered from highest to lowest. It can be seen that among the items with the highest scores there are "I can solve most problems if I put in the necessary effort", "If I find myself in trouble I can always think of something to do to overcome it", "Even if someone gets in my way, I can find the means and the strength to get what I want", "I can solve difficult problems if I try hard", "Thanks to my resources, I can handle unforeseen situations". The lowest scoring items, on the other hand, include: "Whatever happens to me, I can handle it", "I do not lose my temper when facing difficulties because I can rely on my ability to cope with them".

Tab. 4 *Scores obtained by the study population on the individual items of the self-efficacy test*

Items	Average score
I can solve most problems if I put in the necessary effort	8,05
If I find myself in trouble I can always think of something to do to overcome it	7,66
Even if someone gets in my way, I can find the means and the strength to get what I want	7,61
I can solve difficult problems if I try hard	7,5
Thanks to my resources, I can handle unforeseen situations	7,22
It is easy for me to stick to my intentions and achieve my goals	6,88
I feel able to cope adequately with unexpected events	6,55
Whatever happens to me, I can handle it	5,72
I do not lose my temper when facing difficulties because I can rely on my ability to cope with them	5,5

4.3.5 Academic success

Academic success was obtained by multiplying the ECTS obtained for the total ECTS (the number of ECTS that could be reached within the year in which the student is enrolled), and dividing the result by the grade point average.

Females obtained an average score of 14,05. The standard deviation for the female sample is 12,685.

Figure 5 represents the average score obtained by the female population of the study.

4.3.6 Learning strategies

The normative QSS values were calculated on 33 items; 6 items from each questionnaire (5, 6, 9, 11, 31, 33 for *effectiveness* and 2, 3, 4, 14, 17, and 33 for *use*) are considered control items because they describe study behaviors that are not fully functional and were not included in the calculation of the final score.

The standardized average for the effectiveness evaluation reported by De Beni et al. is 162,38. The population that participated in this study recorded an average score of 164,08. The average score obtained by the sample under usage evaluation is 152,4, whereas the standardized average reported by De Beni et al. is 144,42. As far as the strategic inconsistency, the standardized average reported by De Beni et al. is 40,74, while the sample of this study achieved an average score of 68, which is rather above average. Figure 6 shows the averages comparing the study population and the normative population under the heading of strategic inconsistency.

Fig. 6 *Effectiveness, use and strategic inconsistency of the study population and standardized scores of the normative population*
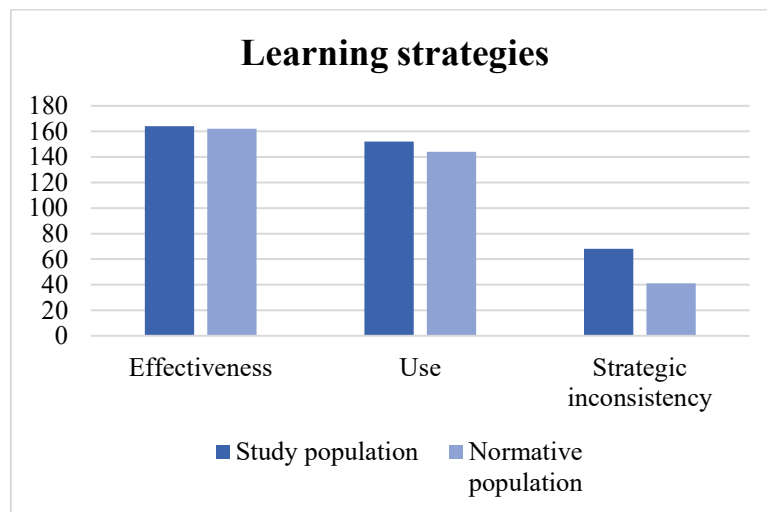
Of the 33 items, 27 are strategies considered more functional to a more precise and accurate study, and 6 are considered to be less functional. Table 6 compares the scores obtained from the study population on the most effective strategies with the standardized values, while table 7 compares the scores obtained by the study population on the least useful strategies with standardised values.

Table 5 shows the averages of study participants in the items of strategies considered most effective compared with those in the normative population reported in AMOS test. The strategy that scored highest in the study participants under "effectiveness" was "Check that you are comprehending the text", while in the normative population it was "Make yourself diagrams and schematics." In contrast, in both the study population and the normative population the strategy that received a lower average score is "Try to memorize names, data, or technical elements with some mnemonic tricks (associations, rhymes, phonetic method, bizarre connections, etc.)".

The strategy most used by the study population is "Make yourself diagrams and schematics", while the one most used by the normative population is "Take notes while studying". Given the high percentage of dyslexic and disortographic participants in the study population, the preference for this strategy is not surpring.

Tab. 5 *Scores obtained by the study population and the normative population on the most efficient strategies*

Most efficient strategies	Study population - effectiveness	Standardized scores - effectiveness	Study population - use	Standardized scores - use
To take notes while studying	5,70	5,37	4,95	5,33
To make diagrams and schematics	5,85	4,38	5,6	4,76
To write down key points alongside the text	5	4,97	4,35	5,11
To memorize names, data…	4,75	1,41	4,35	3,47
To check that you are comprehending the text	6,20	4,21	4,35	5,27
To review after a while	5,55	4,94	4,5	4,8
To highlight the points you do not remember and focus the review on them	5,60	4,44	5,15	5,05
To take a rehearsal of the exam	5,10	2,72	5	3,44

On the other hand, table 6 shows the averages of the study participants and the normative population for the strategies considered less functional to a precise and accurate study. According to the study participants, among the less functional strategies the most useful one is "Underline during the first reading", while for the normative population it is "Study in common areas to be inspired by the example of others and not to get distracted".

The strategy most used by both the study participants and the normative population is, as before, "Underline during the first reading"; the least used by the study population

instead is "Read the text aloud at least once", while the least used by the normative population is "Interrupt the study of the chapter with the study of other subjects ".

Tab. 6 *Scores obtained by the study population and the normative population on the lest efficient learning strategies*

Least efficient strategies	Study population – effectiveness	Normative population – effectiveness	Study population – use	Normative population – use
To read the text aloud at least once	2,90	2,68	2,5	3,18
To underline during the first reading	5,15	4,92	5,35	5,77
To accompany the study with music or other audio-visual entertainments in the background	4,15	4,71	4,15	2,33
To study in common areas to be inspired by the example of others and not to get distracted	4,10	6,01	4,3	3,18
To study with a friend	4,30	4,37	3,35	3,02
To interrupt the study of the chapter with the study of other subjects	4,35	4,39	3,5	2,54

Tab. 7 shows the average scores obtained by the participants under the heading effectiveness for each individual strategy. We can see that among the most effective learning strategies there are: "To take precautions regarding one's psychophysical well-being (diet, sleep, schedule) to maximise the benefits of study", "To check that you are understanding the text", "To take immediate countermeasures if you feel you do not understand", "To take notes while studying", and "To look for concrete examples when possible". Among the strategies considered less effective, instead, there are "To read the text aloud at least once", "To study in common areas to be inspired by the example of others and not to get distracted", "While reading, to try to predict what will be said in the

following parts of the text", "To decide not to study certain topics because they are irrelevant" and "At the end of the study summarise the chapter".

Tab. 7 *Average scores obtained by the study population at the heading "effectiveness" of the individual items of the learning strategies test*

Learning strategy	Effectiveness
To take precautions regarding one's psychophysical well-being (diet, sleep, schedule) to maximise the benefits of study	6,27
To check that you are understanding the text	6,22
To take immediate countermeasures if you feel you do not understand	5,88
To take notes while studying	5,77
To look for concrete examples when possible	5,77
To highlight what you do not remembered and focus the revision on it	5,72
To underline using highlighters or different coloured pencils	5,66
To choose a different way of approaching the study depending on the type of text and aims	5,66
To find out what the exam questions might be	5,38
To review the subject at the end of the study	5,38
To make yourself a study schedule	5,22
To think about the things you may already know about the subject	5,16
To take a rehearsal of the test/examination	5,16
During the study, repeat in your own words the most salient points	5,11
To underline during the first reading	5,05
To write down key points alongside the text	4,94
To try to memorise the main points with mnemonic tricks	4,94
To check and take precautions not to get distracted	4,88
To try to memorise names, dates or technical elements with mnemonic tricks	4,88
To have a quick look at the text before you start reading	4,88
To repeat the subject with a friend	4,77
To imagine what the exam questions might be	4,61
To suspend the study if the feeling of not understanding persists and to resume it later	4,55
To ask yourself which points of the chapter are the most interesting and which are the most questionable	4,5
To try to personalise the main points by asking yourself whether you agree with them, whether they suit your personal experience, etc.	4,44
During the study, to summarize the text in your own words	4,44
To try to integrate with other texts or aids	4,44
To try to repeat what you have read, even before you have finished the study	4,38
To study with a friend	4,22
To accompany the study with music or another audiovisual source in the background	4
To study in common areas to be inspired by the example of others and not to get distracted	4
At the end of the study summarise the chapter	3,88
To decide not to study certain topics because they are irrelevant	3,16
While reading, to try to predict what will be said in the following parts of the text	3,11

To interrupt the chapter study to study other topics	3
To read the text aloud at least once	2,94

Table 8, on the other hand, shows the scores obtained by the participants under the heading "use". Among the most frequently used strategies there are: "To underline using highlighters or different coloured pencils", "To choose a different way of approaching the study depending on the type of text and aims", "To take precautions regarding one's psychophysical well-being (diet, sleep, schedule) to maximise the benefits of study", "To find out what the exam questions might be", and "To look for concrete examples when possible". Instead, lesser-used strategies include: "To read the text aloud at least once", "To study with a friend", "To repeat the subject with a friend", "While reading, to try to predict what will be said in the following parts of the text", and "To decide not to study certain topics because they are irrelevant".

Tab. 8 *Average scores obtained by the study population at the heading "use" of the individual items of the learning strategies test*

| Learning strategy	Use
To underline using highlighters or different coloured pencils	6,38
To choose a different way of approaching the study depending on the type of text and aims	6,05
To take precautions regarding one's psychophysical well-being (diet, sleep, schedule) to maximise the benefits of study	5,88
To find out what the exam questions might be	5,88
To look for concrete examples when possible	5,72
To think about the things you may already know about the subject	5,66
To check that you are understanding the text	5,38
To review the subject at the end of the study	5,22
To underline during the first reading	5,22
To take immediate countermeasures if you feel you do not understand	5,16
To take a rehearsal of the exam	5,05
To highlight what you do not remembered and focus the revision on it	5,05
To take notes while studying	4,94
To imagine what the exam questions might be	4,88
To check and take precautions not to get distracted	4,66
To have a quick look at the text before you start reading	4,55
To try to memorise the main points with mnemonic tricks	4,44
To try to memorise names, dates or technical elements with mnemonic tricks	4,44
To review after a while	4,33
To make yourself a study schedule	4,33
To write down key points alongside the text	4,27
To study in common areas to be inspired by the example of others and not to get distracted	4,22

To accompany the study with music or another audiovisual source in the background	4
To try to personalise the main points by asking yourself whether you agree with them, whether they suit your personal experience, etc.	3,83
To suspend the study if the feeling of not understanding persists and to resume it later	3,77
To try to repeat what you have read, even before you have finished the study	3,66
To interrupt the chapter study to study other topics	3,55
At the end of the study summarise the chapter	3,55
Identify an idea of particular interest and develop it beyond what is said in the text	3,55
During the study, to summarize the text in your own words	3,38
To try to integrate with other texts or aids	3,33
To decide not to study certain topics because they are irrelevant	3,33
While reading, to try to predict what will be said in the following parts of the text	3,33
To repeat the subject with a friend	3,22
To study with a friend	3,16
To read the text aloud at least once	2,61

4.3.7 Reading time

Fig. 7 shows the average time used during first reading (Time1) and second reading (Time2), and the total time (Time tot) used by the study population during the reading test. Time is reported in seconds. It can be seen from the graph that the first reading took longer than the second; the trend of the graph showing time in first and second reading, therefore, is decreasing. The second part of the graph, on the other hand, records the total time spent in both first and second reading; in this case the trend of the graph is increasing.

The average first reading time is 171 seconds, the average second reading time is 130 seconds, and the total reading time is 301 seconds.

Fig. 7 *Reading time (1, 2, tot) of the study population*
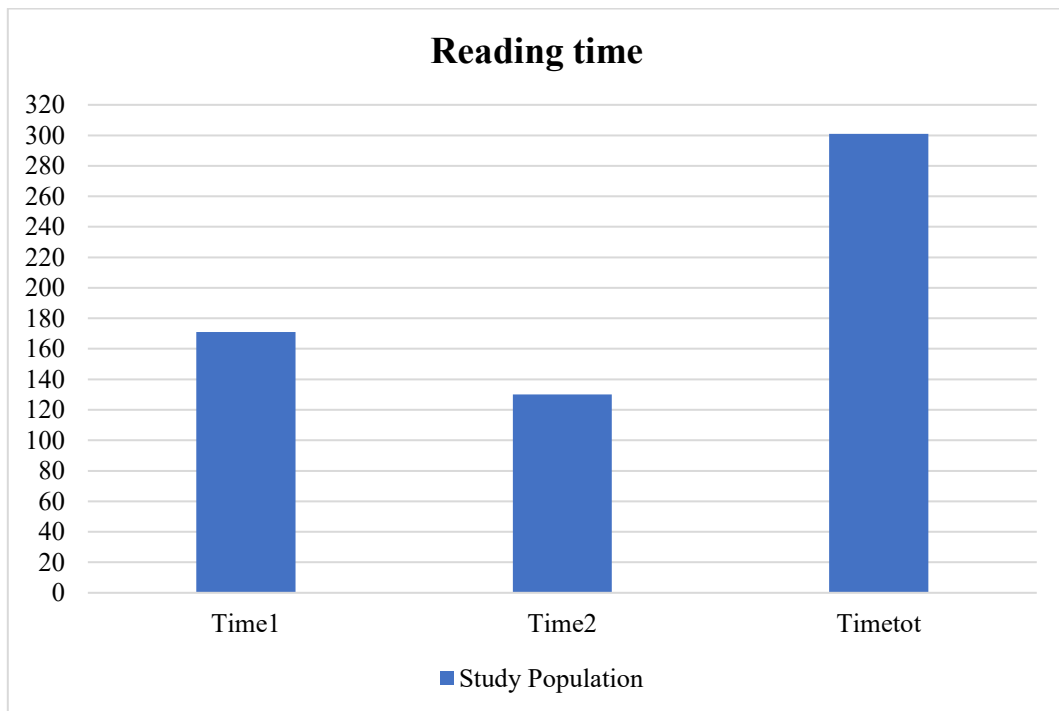
Reading time

4.3.8 Reading Comprehension

Participants were divided in two groups, each group had to read a different text of 400 words. Participants had to read the text, answer 10 open-ended questions and repeat the procedure a second time. No time limit was imposed on the reading. For every set of questions, the maximum score that could be reached was 100. Each correct answer was awarded 10 points, while partially correct answers were awarded 5 points. Although the answer given was correct, if after the second reading the participant gave a more complete answer, the answer after the first reading was awarded 5 points, while the answer after second reading was awarded 10 points.

Fig. 8 depicts the development of the average scores of first and second reading comprehension (comprehension 1 and comprehension 2) during the test; it can be seen that the average score increased after the second reading. This improvement is justified

by the fact that participants had already read the same text, and in the second reading were able to concentrate on the passages they remembered less.

The average score for comprehension after the first reading is 45, while the average score obtained by the study participants after the second reading is 84,5.

Fig. 8 *First and second reading comprehension of the study population*
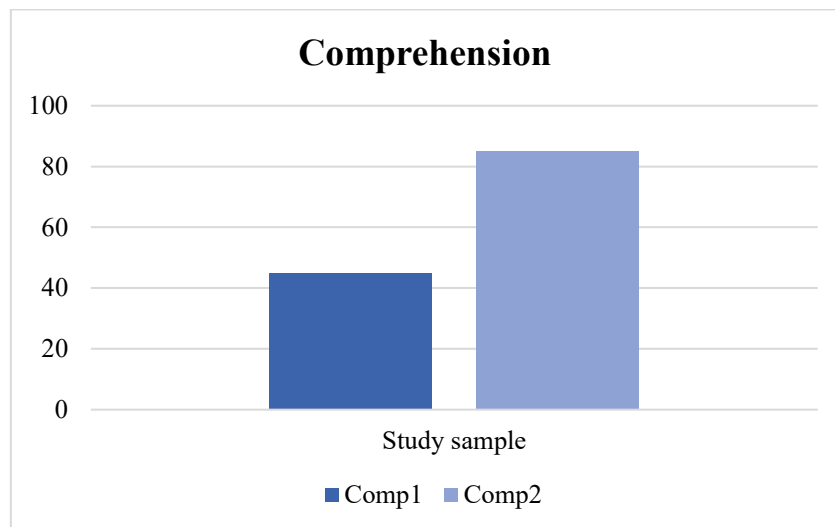
4.3.9 Reading effectiveness

Fig. 9 represents the average trend in reading effectiveness, a value that, as it has been previously explained, expresses the amount of comprehension in the unit of time, during both first and second reading (RE1 and RE2), and the total reading effectiveness (REtot). In general it can be seen that in the second reading the study population reported a higher reading effectiveness value than in the first reading, which is explained by a higher average score on comprehension and less time spent reading. The total reading effectiveness takes into account the total time and the second reading score on comprehension.

The average first reading effectiveness score is 106,7; an increase in reading efficiency can be noted after the second reading, and the score is 262,22. Finally, the score dropped again for total reading effectiveness (112,13).

Fig. 9 *Reading effectiveness of the study population*
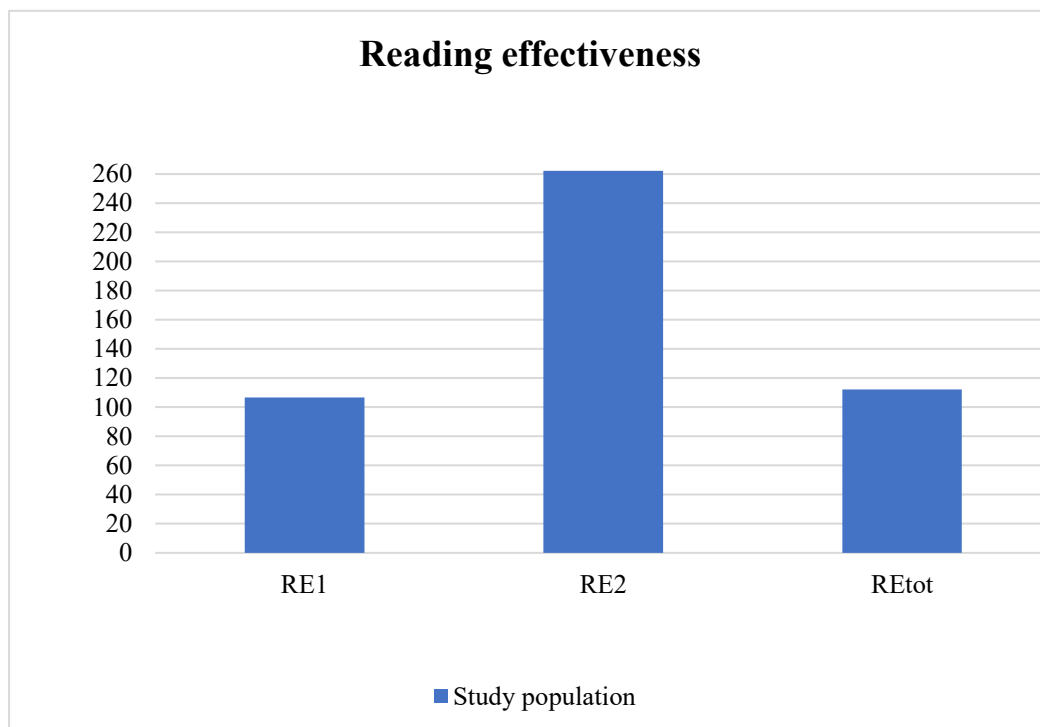
4.3.10 Total average time, reading comprehension and effectiveness

Table 9 shows the average score registered by the study population in time, comprehension, and reading effectiveness for first and second reading and the total performance. As previously mentioned, there was a decrease in second reading time and an increase in text comprehension scores in the revision. Second reading effectiveness was also higher than the first, given the shorter time taken in the second reading and the higher comprehension score.

Tab. 9 *Time, comprehension, and reading effectiveness of the study population*

	Study population
	Average
Time 1	171
Time 2	130
Time tot	301
Comprehension 1	45
Comprehension 2	84,5
RE1	106,7
RE2	262,22
REtot	112,13

4.4 Correlations

The main purpose of this thesis was to look for possible correlations between academic success, reading effectiveness, and emotional aspects in college students with specific learning disorders. Table 10 and table 11 show the data found in the study population regarding the correlation between the parameters afore mentioned.

As it can be seen in table 10, there is a correlation between academic success and emotionality (rho= -0,944; p= 0,056), worry (rho= -0,977; p= 0,023), and self-efficacy (rho= -0,591; p=0,010). In contrast, no correlations were found between emotional aspects and reading effectiveness (tab. 8 and tab. 9). Despite this, there are values just above the correlation threshold, specifically between reading effectiveness and self-assessment of soft-skills (rho= 0,452; p= 0,060). The lack of correlation between reading effectiveness and emotional aspects could be justified by the small size of the study population.

Tab. 10 *Correlations between academic success, reading effectiveness, test anxiety and self-concept*

	Emotionality		Worry		E		A		S	
	rho	p value	rho	p value	rho.	p value	rho.	p value	rho	p value
Academic success	-0,944	p= 0,056*	- 0,977	P= - 0,023*	-0,325	P= 0,189	-0,139	P= 0,583	- 0,073	P= 0,772
Reading effectiveness	0,110	P= 0,665	- 0,126	P= 0,619	-0,169	P= 0,502	-0,174	P= 0,490	- 0,004	0,988

Tab. 11 *Correlation between academic success, reading effectiveness, self-efficacy, self-assessment of soft-skills and strategic inconsistency*

	Self-efficacy		Soft-skills		Strategic inconsistency	
	Corr.	P value	Corr.	p value	Corr.	p value
Academic success	-0,591	P= 0,010*	-0,086	P= 0,734	-0,414	P= 0,088
Reading effectiveness	-0,050	P= 0,845	0,452	P= 0,060	-0,181	P= 0,473

4.3.1 Academic success and reading effectiveness: individual data compared

Given the lack of correlation between reading effectiveness, academic success and some of the above parameters, the data obtained were investigated individually. Table 10 shows the combined data on academic success and strategic inconsistency per participant. Among these, the highest academic success scores have been highlighted; it can be seen that they have equally low strategic inconsistency scores. However, data (and, in particular, high academic success scores) are too few to draw any conclusion. Further investigation might clarify the results.

Tab. 12 *Academic success and strategic inconsistency data compared and combined per participant*

Strategic inconsistency	Academic success	Strategic inconsistency	Academic success
73	21	57	21
69	5	73	0
77	20	**54***	**29***
67	10	56	18
73	10	80	20
85	6	69	4
72	9	87	15
70	37	25	19
51*	**25***	**25***	**28***

Tab 12 shows the combined data on reading effectiveness and self-concept per participant. It can be noted that among the highest scores of reading effectiveness recorded, nine are also related to at least one test parameter on the concept of self that has achieved medium or medium/high scores. Four of these nine have positive scores in more than one item. On the other hand, among the lowest scores registered in reading effectiveness (<100), three out of six are also linked to one or more low scores in at least one of the test parameters on the concept of self.

The low number of participants in the study does not allow conclusions to be drawn from the following analysis.

Tab. 13 *Reading effectiveness and self-concept data compared and combined per participant*

Reading effectiveness	E	A	S	Reading effectiveness	E	A	S
126	5,85*	4,58	4,75*	110	4,85	5,41*	3,12
96	5,28	5,75	4	146	5,64*	4,58	4,62*
165	4,07	4,83	3,37	180	5,5*	4,83	3,62
71	5,64	5,08	5	104	4,92	5,16	4,37
118	5,57*	5,16*	4,25*	131	4,5	5,41*	4,5
113	5*	5,91*	3,87	*71*	5,07	5,08	*3,12**‌*
113	3,42	4,58	2,75	*88*	*4,21**‌*	5	4,25
96	*4,14**‌*	5,08	*3,75**‌*	99	6,28	6,08	4
120	4,92	6	3,75	159	3,5	5	4

Tab. 13 shows the data on reading effectiveness, self-assessment of soft skills, and self-efficacy combined per participant and compared. Of 12 scores >100 in reading effectiveness, eight are linked to scores in the self-assessment of soft skills above the critical threshold (<5,92). Six of these eight are also above the standardized average (6.54). Four of these twelve scores above >100 in reading effectiveness are above the standardized average for self-efficacy (37). Other three score below average but above the critical threshold (<33).

Instead of the six scores <100 recorded in reading effectiveness, four are linked to scores below the standardized average and/or below the criticality threshold of self-assessment and/or self-efficacy. More specifically, four are linked to a score below the criticality threshold of the self-assessment of soft skills, and two are linked to scores below the standardized average of self-efficacy.

However, the low number of participants in the study does not allow us to draw conclusions.

Tab. 14 *Reading effectiveness, self-assessment of soft-skills, and self-efficacy data compared and combined per participant*

Reading effectiveness	Self-assessment of soft skills	Self-efficacy	Reading effectiveness	Self-assessment of soft skills	Self-efficacy
126	**6,62***	**43***	**110**	5,69	**40***
96	6,46	39	**146**	**6,77***	**41***
165	**6,69***	29	**180**	**6,77***	**36***
71	6,31	38	**104**	**6,77***	**36***
118	**6**	32	**131**	**6,85***	**44***
113	**6,31***	38	*71*	*5,38****	46
113	3,69	34	*88*	*5****	*30****
96	*4****	*10****	99	*5,54****	40
120	**6,38***	26	159	5	32

4.5 Discussion

The results partially confirm much of the data found during the literature review presented in the previous chapters. College students with specific learning disorders experience more frequent and intense anxiety and stress than their peers without specific learning disorders (Riddick et al., 1999; Nalavany et al., 2017; Davis et al., 2009; Eissa, 2010; Carroll & Iles, 2006). In this regard, it is relevant to highlight that 7 participants out of 20, a third, scored on the borderline or above the critical threshold of test anxiety. However, it is also relevant to highlight that participants scored below average on emotionality, which includes tension and physical symptoms. Thus, from the data presented in the present study, students with SLDs are more likely to experience higher states of general preoccupation from intrusive thoughts related to the task than the standardized average but less anxiety related to physical symptoms than the standardized average of students without specific learning disorders.

Regarding self-concept, it has been recorded an average score that is below the standardized average of students without SLDs. The data indicates that students with specific learning disorders have a slightly lower overall self-concept than the average college students without specific learning disorders. In this sense, the results only partially match those found in the literature review, in which there is a division between those who argue that the general self-concept of students with specific learning disorders is more negative than general self-concept of students without specific learning disorders (Kloomok & Cosden, 1994; Vaughn & Elbaum, 1999), and who instead reported that general self-concept is not necessarily lower (Lewandowski & Arcangelo, 1994; Frederickson & Jacobs, 2001; Gans et al., 2003; Chapman et al., 2004; Gadeyne et al., 2004; Gans et al., 2004; Reschly & Christenson, 2006; Ntshangase et al., 2008; Pestana, 2014). Instead, their academic self-concept would be lower (Zeleke, 2004). The average score obtained on parameter E (energy, dynamism) is 4.90, which is both below the standardized average (5.53) and the critical threshold (4.93). Six participants scored below the critical threshold. The average score that participants got on parameter A (positive affectivity) is 5.20, which is slightly below the standardized average (5.25) but above the critical threshold (<4.92). Five participants scored below the critical threshold. Finally, participants scored 3.93 at the S (emotional stability) parameter, while the

standardized average is (4.38), and the critical threshold is (<3.63). Five participants scored below the critical threshold. Based on the data collected, it can be inferred that the self-concept of the study population (students with SLDs) is lower than that of the normative population (students without SLDs).

Self-efficacy scores were also lower than the standardized average, although they were not below the critical threshold. The literature review in the previous chapters shows that the school context in which the student is inserted is critical in developing a positive concept of self and self-efficacy. Indeed, it has been proven that students placed in specialized contexts often did not have problems with low self-esteem and feelings of depression and/or anxiety (Forman, 1988; Priel & Leshem, 1990; Butler & Marinov-Glassman, 1994; Bear & Minkle, 1996; Humphrey, 2002). It is particularly relevant to highlight that 7 participants out of 18 scored below the critical threshold.

Regarding academic success, college students with SLDs from the following study registered an average low score on academic success, with an average score of 9,25. The correlation between academic success and participants' emotional aspects has also been investigated. In particular, there is evidence of a correlation between worry and academic success (rho= -0,977; p= 0,023), meaning that students who experience higher levels of cognitive concern about performance get lower test scores or fall behind on exams.

A correlation was also found between academic success and self-efficacy (rho= -0,591; p= 0,010) but not between academic success and self-assessment of soft skills (rho= -0,086; p= 0,734). Participants who scored around or above the standardized average on the self-efficacy assessment did have high scores on the academic success item. However, the participant with the highest score on the self-efficacy test got the lowest score on the academic success assessment. On the other hand, participants with medium/high scores on the soft skills self-assessment test also did not necessarily score high in academic success. Thus, self-efficacy seems to influence academic success, while people's self-assessment of their soft skills does not.

No correlation was found between academic success and strategic inconsistency (rho= -0,414; p= 0,088), but a qualitative analysis showed that scores above average in academic success (>25) were also correlated with low scores in the strategic inconsistency item. Considering this, and considering the score of correlation between the two parameters, which is rather on the borderline between correlation and non-correlation

(p=0,088), the non-correlation could be justified by the small population of the sample examined, and further investigation might clarify the results.

As far as reading effectiveness is concerned, no correlation was also found between reading effectiveness and self-concept, self-efficacy, self-assessment of soft skills, and strategic inconsistency. Moreover, no correlation was found with the worry (rho= -0,126; p= 0,619) and emotionality (rho= 0,110; p= 0,665) parameters. However, analyzing the individual data, it turned out that higher scores in academic success were also related to higher scores in reading effectiveness. Similarly, most of the higher scores in self-evaluation of soft skills, self-efficacy, and self-concept were linked to higher scores in reading effectiveness. However, given the small number of study participants, it is impossible to draw any conclusion, and further investigation might shed light on the present results.

Chapter V - Conclusions

In Italy, decoding ability and comprehension have always been studied separately, but in the United Kingdom there are test that unite them. The Anglo-Saxon and Italian authors Scagnelli, De Beffa, and Santulli have demonstrated the advantages of integrating reading speed and comprehension into a single parameter, reading effectiveness (RE), which gives a better understanding of the reader's profile and is a more ecological measure. Furthermore, current research on the various aspects of reading has rarely taken into consideration adult readers (and adult readers with specific learning disorders). The aim of the present study was to answer to the following question: do emotional aspects influence reading effectiveness and, more in general, academic success?

In a population of 20 university students diagnosed with specific learning disorders, reading effectiveness, academic success, and emotional aspects have been analyzed through a reading test, and four questionnaires designed to investigate test anxiety, self-efficacy, self-concept, and learning strategies. From the results it emerged a statistically significant correlation between academic success and some emotional aspects, namely test anxiety and self-efficacy: high levels of worry, emotionality, and self-efficacy correspond to lower scores in academic success. Given this correlation, it might be crucial to provide psychological support to students who approach the school environment. Indeed, anxiety affects the performance and overall academic success of the students, leading them into a vicious circle in which anxiety worsens their academic success, and academic success worsens their self-efficacy.

The results also reveal that students with learning disorders approach the learning process differently from neurotypical students. Indeed, from the questionnaire on the learning strategies it emerged that, while studying, the study population finds useful to make diagrams and schematics. Instead, the normative population finds more effective to take notes. The study population, as opposed to the normative population, finds it very useful to memorise information with mnemonic tricks. On the other hand, the normative population finds it much more effective to study in common areas to be inspired by the example of others, while the study population does not. The study population also registered a higher strategic inconsistency score than the normative population.

As far as the correlation between reading effectiveness and emotional aspects is concerned, this study could not prove it. However, the qualitative analysis suggests that future research should investigate these parameters on a larger sample. Proving that reading effectiveness is related to emotional aspects increases our understanding of the process of reading in adulthood. Moreover, it indicates new possible approaches to help students with specific learning disorders, especially with dyslexia, improve their performance and feel more confident when carrying out these tasks.

Bibliography

- Ackerman, P. L., Heggestad, E. D., (1997). "*Intelligence, Personality, and Interests: Evidence for Overlapping Traits*", Psychological Bulletin, Vol. 121, No. 2, pp. 219 – 245.

- Alesi, M., Rappo, G., Pepi, A., (2014). "*Depression, Anxiety at School, and Self-Esteem in Children with Learning Disabilities*", Journal of Psychological Abnormalities in Children, Vol. 3, 1000125.

- Alexander-Passe, N., (2006). "*How Dyslexic Teenagers Cope: An Investigation of Self-esteem, Coping and Depression*", Dyslexia 12: 256 – 275.

- Alexander-Passe, N., (2015a). "*Perceptions of success in dyslexic adults in the UK. Asia Pacific Journal of Developmental Differences*", Vol. 2, No. 1, pp. 89 – 111.

- Alexander-Passe, N., (2015b). "*The Dyslexia Experience: Difference, Disclosure, Labelling, Discrimination and Stigma*", Asia Pacific Journal of Developmental Differences, Vol. 2, No. 2, pp. 202 – 233.

- Al Zyoudi, M., (2010). "*Differences in self-concept among student with and without learning disabilities in Al Karak District in Jordan*".

- Andreassen, R., Jensen, M. S., Bråten, I., (2017). "*Investigating self-regulated study strategies among postsecondary students with and without dyslexia: a diary method study*", Springer, DOI 10.1007/s11145-017-9758-9.

- Angelini, C., (2010). "*Apprendere ad apprendere e capacità di comprensione della lettura: il caso degli studenti adulti della facoltà di Scienze della Formazione dell'Università Roma Tre*".

- Bear, G. G., Kortering L. J., Braziel, P., (2006). "*School Completers and NoncompletersWith Learning Disabilities. Similarities in Academic Achievement and Perceptions of Self and Teachers*", Remedial and Special Education, Vol. 27, No. 5, pp. 293 – 300.

- Bear, G. G., Minkle, K. M., (1996). "Positive Bias in Maintenance of Self-Worth among Children with LD", Learning Disability Quarterly, Vol. 19, No. 1, pp. 23 – 32.

- Bender, W. N., Rosenkrans, C. B., Crane, M. K., (1999). "*Stress, Depression, and Suicide among Students with Learning Disabilities: Assessing the Risk*", Learning Disability Quarterly, Vol. 22, No. 2, pp. 143 – 156.

- Bender, W. N., Wall, M. E., (1994). "*Social-Emotional Development of Students with Learning Disabilities*", Learning Disability Quarterly, Autumn 1994, Vol. 17, No. 4, Social-Emotional Development, pp. 323 – 341.

- Bennett, D. S., Ambrosini, P. J., Kudes, D., Metz, C., Rabinovich, H., (2005). "*Gender differences in adolescent depression: Do symptoms differ for boys and girls?*", Journal of Affective Disorders, Vol. 89, pp. 35 – 44.

- Boekaerts, M., (1999). "*Self-regulated learning: where we are today*", International Journal of Educational Research, Vol. 31, pp. 445 – 457.

- Bogart, K. H., Dunn, D. S., (2019). "*Ableism Special Issue Introduction*", Journal of Social Issues, Vol. 75, No. 3, pp. 650 – 664.

- Botsas, G., (2017). "*Differences in Strategy Use in the Reading Comprehension of Narrative and Science Texts Among Students With and Without Learning Disabilities*", Learning Disabilities: A Contemporary Journal Vol. 15, No. 1, pp. 139 – 162.

- Burden, R., (2008). "*Is Dyslexia Necessarily Associated with Negative Feelings of Self-worth? A Review and Implications for Future Research*", John Wiley & Sons, Ltd., DYSLEXIA Vol.14, pp. 188 – 196.

- Burden, R., Burdett, J., (2005). "*Factors associated with successful learning inpupils with dyslexia: a motivational analysis*", British Journal of Special Education, Vol. 32, No. 2.

- Caqueo-Urízar A., Mena-Chamorro P., Atencio-Quevedo D., Flores J., Urzúa A., (2021). "*Self-esteem in adolescents with learning difficulties: A study from the perspective of the students, parents, and teachers*".

- Carroll, J. M., Iles, J. E., (2006). "*An assessment of anxiety levels in dyslexic students in higher education*", British Journal of Educational Psychology, Vol. 76, pp. 651 – 662.

- Cassady, J. C., Johnson, R. E., (2002). "*Cognitive Test Anxiety and Academic Performance*", Contemporary Educational Psychology, Vol. 27, pp. 270 – 295.

- Chapman, J. W., Tunmer, W. E., (1997). "*A longitudinal study of beginning reading achievement and reading self-concept*", British Journal of Educational Psychology, Vol. 67, pp. 279 – 291.

- Coffield, M., O'Neill, J., (2004). "*The Durham Experience:Promoting Dyslexia andDyspraxia Friendly Schools*", DYSLEXIA Vol. 10, pp. 253 – 264.

- Cohen, J., (1986). "*Learning Disabilities and Psychological Development in Childhood and Adolescence*", Annals of Dyslexia , Vol. 36, pp. 287 – 300.

- Coltheart, M., (2006). "*Dual route and connectionist models of reading: an overview*", London Review of Education, Vol. 4, No. 1, pp. 5 – 17.

- Cooper, R., (2006a). "*Making Learning Styles Meaningful*", PATOSS Bulletin, Vol. 19, No.1 pp. 58 – 63.

- Cooper, R., (2006b). "*Neurodiversity and dyslexia; challenging the social construction of specific learning difficulties*", London South Bank University, available online [http://outsidersoftware.co.uk/wp-content/uploads/2017/03/Neurodiversity-and-Dyslexia-Challenging-the-social-construction-of-specific-learning-differences.pdf].

- Cooper, R., (2009). "*Neurodiversity and Dyslexia: compensatory strategies, or different approaches*", available online [https://www.achieveability.org.uk/files/1460064671/neurodiversity-and-dyslexia-by-ross-cooper.pdf]

- Cosden, M., Elliott, K., Noble, S., Kelemen, E., (1999). "*Self-understanding and self-esteem in children with learning disabilities*",

- Cottini, L., (2006). "*La didattica metacognitiva*", Università degli studi di Udine.

- Dåderman, A. M., Nilvang, K., Levander, S., (2014). " '*I Dislike my Body, I am Unhappy, But my Parents are not Disappointed in Me': Self-Esteem in Young Women with Dyslexia*", Applied Psychology Research Journal, pp. 50 – 58.

- Davis, T. E., Nida, R. E., Zlomke, K. R., Nebel-Schwalm, M. S., (2009) "*Health-Related Quality of Life in College Undergraduates with Learning Disabilities: The Mediational Roles of Anxiety and Sadness*", Journal of Psychopathological and Behavioral Assessment, Vol. 31, pp. 228 – 234.

- De Beni, R., Moè, A., Cornoldi, C., Meneghetti, C., Fabris, M., Zamperlin, C., De Min Tona, G., (2023). "*AMOS. Abilità e motivazione allo studio: prove di*

valutazione e orientamento per la scuola secondaria di secondo grado e l'università", Erickson.

- Di Nuovo, S., Magnano, P., (2013). "*Competenze trasversali e scelte formative*".

- Dolmage, J. T., "*Academic Ableism*", University of Michigan Press.

- Eissa, M., (2010). "*Behavioural and Emotional Problems Associated with Dyslexia in Adolescence*", Current Psychiatry, Vol. 17, No. 1, pp. 39 – 47.

- Elbaum, B., "*The Self-Concept of Students with Learning Disabilities: A Meta-Analysis of Comparisons Across Different Placements*", Learning Disabilities: A Contemporary Journal, Vol. 6, No. 1, pp. 33 – 44.

- Elbaum, B., Vaughn, S., (2001), "*School-Based Interventions to Enhance the Self-Concept of Students with Learning Disabilities: A Meta-Analysis*", The Elementary School Journal, Vol. 101, No. 3, Special Issue: Instructional Interventions for Students with Learning Disabilities, pp. 303 – 329.

- Emerson, E., Heslop, P., "*A working definition of Learning Disabilities*", Improving Health and Lives Learning Disability Observatory, Durham (2010).

- Exley, S., (2003). "*The effectiveness of teaching strategies for students with dyslexia based on their preferred learning styles*", British Journal of Special Education, Vol. 30, No. 4, pp. 213 – 220.

- Fakier, N., Wild, L., G., (2011). "*Associations among sleep problems, learning difficulties and substance use in adolescence*", Journal of Adolescence, Vol. 34, pp. 717 – 726.

- Fathi-Ashtiani, A., Ejei, J., Khodapanahi, M.K., Tarkhorani, H., (2007), "*Relationship Between Self-concept, Self-esteem, Anxiety, Depression and Academic Achievement in Adolescents*", Journal of Applied Sciences, Vol. 7, No. 7, pp. 995 – 1000.

- Fostik, L., Revah, H., "Dyslexia as a multi-deficit disorder: Working memory and auditory temporal processing", Acta Psychologica, Vol. 183, pp. 19 – 28.

- Frederickson N. e Jacobs S. (2001), "*Controllability attributions for academic performance and the perceived scholastic competence, global self-worth and achievement of children with dyslexia*", «School Psychology International», Vol. 22.

- Friedmann, N., Coltheart, M., (2018). "*Types of Developmental Dyslexia*", In A. Bar-On, & D. Ravid (Eds.), "Handbook of communication disorders: Theoretical, empirical, and applied linguistics perspectives."

- Gallegos, J., Langley, A., Villegas, D., (2012). "*Anxiety, Depression, and Coping Skills Among Mexican School Children: A Comparison of Students With and Without Learning Disabilities*", Learning Disability Quarterly, Vol. 35, No. 1, pp. 54 – 61.

- Gans, A., Kenny, M. C., Ghany, D. L., "*Comparing the Self-Concept of Students With and Without Learning Disabilities*", 2003.

- Gecas, V., (1982). "*The Self-concept*", Annual Review of Sociology, Vol. 8, pp. 1 – 33.

- Geisthardt, C., Munsch, J., (1996). "*Coping with School Stress: A Comparison of Adolescents With and Without Learning Disabilities*", Journal of Learning Disabilities, Vol. 29, No. 3, pp. 287 – 296.

- Gernsbacher, M. A., Kaschak, P., (2013). "*Text Comprehension*", Handbook of Cognitive Psychology, pp. 462 – 474.

- Geva, E., Wade-Woolley, L., Shany, M., "*Development of Reading Efficiency in First and Second Language*", Scientific Studies of Reading, Vol. 1, No. 2, pp. 119 – 144.

- Glazzard, J., (2020). "*The impact of dyslexia on pupils' self-esteem*", British Journal of Learning Support - Support for Learning, vol. 25, No. 2.

- Grills-Taquechel, A. E., Fletcher, J. M., Vaughn, S. R., Stuebing, K. K., "*Anxiety and Reading Difficulties in Early Elementary School: Evidence for Unidirectional- or Bi-Directional Relations?*", Child Psychiatry and Human Development, Vol. 43, pp. 35 – 47.

- Grolnick, W. S., Ryan, R. M., (1990). "*Self-Perceptions, Motivation and Adjustment in Children with Learning Disabilities: A Multiple Group Comparison Study*", Journal of Learning Disabilities, Vol 23, No. 3, pp. 177 – 184.

- Habib, A., Naz, F., (2015). "*Cognitive failure, teacher's rejection and interpersonal relationship anxiety in children with dyslexia*", Pakistan Journal of Medical Sciences, Vol. 31, No. 3., pp. 662 – 666.

- Halonen A., Aunola K., Ahonen T., (2006). "*The role of learning to read in the development of problem behaviour: a cross-lagged longitudinal study*", British Journal of Educational Psychology, Vol. 76, pp. 517 – 534.

- Hammill, D. D., Leigh, J. E., McNutt, G., Larsen, S. C., (1981). "*A new definition of learning disabilities*",

- Harter, S., Pike, R., (1984). "*The Pictorial Scale of Perceived Competence and Social Acceptance for Young Children*", Child Development , Vol. 55, No. 6, pp. 1969 – 1982.

- Hayes, M. L., Sloat, R. S., (1988). "*Preventing suicide in learning disabled children and adolescents*", Academic Therapy, pp. 221 – 230.

- Hampton, N. Z., Mason, E., (2003). "*Learning Disabilities, Gender, Sources of Efficacy, Self-Efficacy Beliefs, and Academic Achievement in High School Students*", Journal of School Psychology, Vol. 41, pp. 101 – 112.

- Heath, N. L., Ross, S., (2000). "*Prevalence and expression of depressive symptomatology in students with and without learning disabilities*", Learning Disability Quarterly, Vol. 23, pp. 24 – 36.

- Hehir, T., (2002). "*Eliminating Ableism in Education*", Harvard Educational Review, Vol. 72, No. 1.

- Heiman, T., Precel, K., (2003). "*Students with Learning Disabilities in Higher Education: Academic Strategies Profile*", Journal of Learning Disabilities, Vol. 36, No. 3, pp. 248 – 258.

- Hellendoorn, J., Ruijssenaars, W., (2000). "*Personal experiences and adjustment of Dutch adults with dyslexia*", Remedial and Special Education, No. 21, pp. 227 – 239.

- Holmes, J. A., "*Emotional Factors and Reading Disabilities*"

- Hoy, C., Gregg, N., Wisenbaker, J., Manglitz, E., King, M., Moreland, C., (1997). "*Depression and Anxiety in Two Groups of Adults with Learning Disabilities*", Learning Disability Quarterly, Vol. 20, No. 4, pp. 280 – 291.

- Humphrey, N., (2002a). "*Self Concept and Self Esteem in Developmental Dyslexia: Implications for Theory and Practice*",

- Humphrey, N., (2002b). "*Teacher and pupil ratings of self-esteem in developmental dyslexia*",.

- Humphrey, N., Mullins, P. M., (2002). "*Personal constructs and attribution for academicsuccess and failure in dyslexia*", British Journal of Special Education Volume 29, No. 4., pp. 196 – 203.

- Ingesson, S. G. (2007). "*Growing up with dyslexia: Interviews with teenagers and young adults*", School Psychology International, No. 28, pp. 574 – 591.

- Jones, M. H., Symonds, J. E., Downey, S., Sloan, S., Devine, D., Kinsella, W., "*The social acceptance of neurodiverse children in Irish primary schools*", International Journal of Inclusive Education, https://doi.org/10.1080/13603116.2023.2195861

- Kavale, K. A., Forness, S. R., (2000). "*What Definitions of Learning Disability Say and Don't Say. A Critical Analysis*", Journal of Learning Disabilities, Vol. 22, No. 3, pp. 239 – 256.

- Kearns, D. M., Hancock, R., Hoeft, F., Pugh, K. R., Frost, S. J., (2019). "*The Neurobiology of Dyslexia*", Teaching Exceptional Children, Vol. 51, No. 3, pp. 175 – 188.

- Keogh, B. K., "*Celebrating PL 94-142: The Education of All Handicapped Children Act of 1975*", 2007.

- Kirby, J. R., Silvestri, R., Allingham, B. H., Parrila, R., La Fave, C. B., (2008). "*Learning Strategies and Study Approaches of Postsecondary Students With Dyslexia*", Journal of Learning Disabilities, Vol. 41, No. 1, pp. 85 – 96.

- Kirk, S., (1962). "*Educating Exceptional Children*", Cengage Learning; 14th edition (March 5, 2014).

- Knight, C., (2018). "*What is dyslexia? An exploration of the relationship between teachers' understandings of dyslexia and their training experiences*", Dyslexia, Vol.24, pp. 207 – 219. DOI: 10.1002/dys.1593

- Kucuker, S., Tekinarslan, I. (2015). "*Comparison of the self-concepts, social skills, problem behaviors, and loneliness levels of students with special needs in inclusive classrooms*". Educational Sciences: Theory & Practice, 15(6), 1559 – 1573.

- Lewis, S. K., Lawrence-Patterson, E., (1989). "*Locus of Control of Children with Learning Disabilities and Perceived Locus of Control by Significant Others*", Journal of Learning Disabilities, Vol. 22, No. 4, pp. 255 – 257.

- Livingston, M., Siegel, L. S., Ribary, U., "*Developmental dyslexia: emotional impact and consequences*",

- Lufi, D., Darliuk, L., (2005). "*The interactive effect of test anxiety and learning disabilities among adolescents*", International Journal of Educational Research, Vol. 43, pp. 23 – 249.

- Lyon, G. R., Fletcher, J. M., Shaywitz S. E., Shaywitz, B. A., (2001). Torgesen, J. K., Wood, F. B., Schulte, A., Olson, R., "*Rethinking learning disabilities*".

- Lyon, G. R., Shaywitz, S. E., Shaywitz, B. A., (2003). "*A Definition of Dyslexia*", Annals of Dyslexia, Vol. 53, No. 1, pp. 1 – 14.

- Manning, M. A., (2007), "*Self-Concept and Self-Esteem in Adolescents*".

- Margalit, M., Raviv, A., (1984). "*LDs' Expressions of Anxiety in Terms of Minor Somatic Complaints*", Journal of Learning Disabilities, Vol. 17, No. 4, pp. 226 – 228.

- Margari, L., Buttiglione, M., Craig, F., Cristella, A., De Giambattista, C., Matera, E., Operto, F., Simone, M., (2012). "*Neuropsychopathological comorbidities in learning disorders*", BMC Neurology Vol. 13, pp. 1 – 6.

- Margolis, H., McCabe, P. P., "*Self-Efficacy: A Key - to Improving the Motivation of Struggling Learners*", Preventing School Failure: Alternative Education for Children and Youth, Vol. 47, No. 4, pp. 162 – 169.

- Marinelli, C., Romano, G., Cristalli, I., Franzese, A., & Di Filippo, G. (2016). "*Autostima, stile attributivo e disturbi internalizzanti in bambini dislessici.*" Dislessia, Vol. 13, No. 3.

- Mattson, E. H., Roll-Pettersson, L., (2007). "*Segregated Groups or Inclusive Education? An Interview Study with Students Experiencing Failure in Reading and Writing*", Scandinavian Journal of Educational Research, Vol. 51, No. 3, pp. 239 – 252.

- MacCullagh, L., Bosanquet, A., Badcock, N. A., "*University students with dyslexia: A qualitative exploratory study of learning practices, challenges and strategies*", Dyslexia, Vol. 23, No. 1, pp. 3 – 23.

- McGovern, J. C., Lowe, P. A., Hill, J. H., (2016). "*Relationships Between Trait Anxiety, Demographic Variables, and School Adjustment in Students with Specific Learning Disabilities*", J Child Fam Stud, Vol. 25, pp. 1724 – 1734.

- McNulty, A. (2003), "*Dyslexia and the life course*", Journal of Learning Disabilities, Vol. 36 (4), July/August 2003, pp. 363 – 381.

- Moll, K., Kunze, S., Neuhoff, N., Bruder, J., Schulte-Körne, G., "*Specific Learning Disorder: Prevalence and Gender Differences*", PLoS ONE 9(7): e103537. https://doi.org/10.1371/journal.pone.0103537

- Morrison, G. M., Cosden, M. A., (1997). "*Risk, Resilience, and Adjustment of Individuals with Learning Disabilities*", Learning Disability Quarterly, Vol. 20, No. 1, pp. 43 – 60.

- Mortimore, T., Crozier, W. R., (2006). "*Dyslexia and difficulties with study skills in higher education*", Studies in Higher Education Vol. 31, No. 2, pp. 235 – 251.

- Mugnaini, D., Lassi, S., La Malfa, G., Albertini, G., (2009). "*Internalizing correlates of dyslexia*", World Journal of Pediatrics, Vol. 5, No. 4, pp. 255 – 264.

- Nalavany, B. A., Carawan, L. W., Brown, L. J., (2011). "*Considering the role of traditional and specialist schools: do school experiences impact the emotional well-being and self-esteem of adults with dyslexia?*", British Journal of Special Education, Vol. 38, No. 4, pp. 191 – 200.

- Nalavany, B. A., Logan J. M., Carawan, L. W., (2017) "*The relationship between emotional experience with dyslexia and work self-efficacy among adults with dyslexia*", Dyslexia, Vol. 24, pp. 17 – 32.

- Nelson, J. M., Gregg, N., (2012) "*Depression and Anxiety Among Transitioning Adolescents and College Students With ADHD, Dyslexia, or Comorbid ADHD/Dyslexia*", Journal of Attention Disorders Vol. 16, No. 3, pp. 244 – 254.

- Nelson, J. M., Harwood, H., (2011). "*Learning Disabilities and Anxiety: A Meta-Analysis*", Journal of Learning Disabilities, Vol, 44, No. 1, pp. 3 – 17.

- Nelson, J. M., Lindstrom, W., Foels, P. A., (2015). "*Test Anxiety Among College Students With Specific Reading Disability (Dyslexia): Nonverbal Ability and Working Memory as Predictors*", Journal of Learning Disabilities, Vol. 48, No. 4, pp. 422 – 432.

- Ntshangase, S., Mdikana, A., Cronk, C., (2008). "*A comparative study of the self-esteem of adolescent boys with and without learning disabilities in an inclusive school*",

- Olofsson, Å., Ahl, A., Taube, K., (2012). "*Learning and study strategies in university students with dyslexia: Implications for teaching*", Procedia - Social and Behavioral Sciences, Vol. 47, pp. 1184 – 1193.

- Orsolini, M., Ruggerini, C., (2022). "*Understanding intellectual disability: a guide for professionals and parents*", Routledge.

- Oyserman, D. (2001). "*Self-concept and identity*", in A. Tesser & N. Schwarz, The Blackwell Handbook of Social Psychology, pp. 499 – 517. Malden, MA: Blackwell.

- Parmenter, T. R., (2011). "*What is intellectual disability?*", International Journal of Disability, Development and Education, Vol. 58, No. 3, pp. 303 – 319 DOI: 10.1080/1034912X.2011.598675

- Pearson, P. D., Hamm, D. N., (2005). "*The assessment of reading comprehension: A review of practices—Past, present, and future*", Children's reading comprehension and assessment, pp. 13 – 69.

- Pekrun, R., (2021). "*Emotions in Reading and Learning from Texts: Progress and Open Problems*", Discourse Processes, Vol. 59:1-2, pp. 116 – 125, DOI: 10.1080/0163853X.2021.1938878

- Peleg, O., (2009). "*Test Anxiety, Academic Achievement, and Self-Esteem Among Arab Adolescents with and without Learning Disabilities*", Learning Disability Quarterly, Vol. 32, pp. 11 – 20.

- Pestana, C., (2014). "*Exploring the self-concept of adults with mild learning disabilities*",.

- Plakopiti, A., Bellou, I., (2014). "*Text configuration and the impact of anxiety on pupils with dyslexia*", Procedia Computer Science, Vol. 27, pp. 130 – 137.

- Powers, B., Le Loarne-Lemaire, S., Maalaoui, A., Kraus, S., " *"When I get older, I wanna be an entrepreneur": the impact of disability and dyslexia on entrepreneurial self-efficacy perception*", International Journal of Entrepreneurial Behavior & Research, Vol. 27, No. 2, pp. 434 – 445.

- Reschly, A. L., Christenson, S. L., (2006). "*Prediction of Dropout Among Students With Mild Disabilities. A Case for the Inclusion of Student Engagement Variables*", Remedial and special education, Vol. 27, No. 5, September/October 2006, pp. 276 – 292.

- Santulli, F., Scagnelli, M., (2019). "*Leggere per comprendere: un intervento esclusivo nei contesti formativi*", Milano: Angeli.
- Santulli, F., Scagnelli, M., (2022). "*Reading as a Multi-layer Activity: Training Strategies at Text Level*", pp. 286 – 304.
- Scagnelli, M., Della Beffa, F., Santulli, F., (2022). "*An intervention to improve reading abilities: Further evidence*", Ricerche di Psicologia, Vol. 45, pp. 1 – 25.
- Scagnelli, M., Ciuffo, M., Baradello, A., Santulli, F., (2018). "*SuperReading: ulteriori prove di efficacia rilevate con i test di valutazione per l'adulto*", Dislessia 15.1, pp. 35 – 52.
- Scarborough, H. S., Parker, J. D., (2003). "*Matthew effects in children with learning disabilities: Development of reading, IQ, and psychosocial problems from grade 2 to grade 8*", Annals of Dyslexia, Vol. 53, pp. 47 – 71.
- Siegel, L. S., (1999). "*Issues in the definition and Diagnosis of Learning Disabilities: A Perspective on Guckenberger v.*", Journal of Learning Disabilities, Vol. 32, No. 4, pp.
- Societa' italiana di neuropsichiatria dell'infanzia e dell'adolescenza, Linee guida per i disturbi di apprendimento.
- Stampoltzis, A., Polychronopoulou, S., (2009). "*Greek university students with dyslexia: an interview study*", European Journal of Special Needs Education, Vol. 24, No. 3, pp. 307 – 321.
- Stella, G., (2010). "Disturbi specifici di apprendimento: un'introduzione.", Annali della Pubblica Istruzione, La dislessia dei disturbi specifici di apprendimento, pp. 3 – 17.
- Stevens, S. A., (2000). "*Test anxiety and beliefs about testing in college students with and without learning disabilities*", Doctoral Dissertations 1896 - February 2014, 1277. https://doi.org/10.7275/61f5-y146.
- Taylor, L., Adelman, H. S., Nelson, P., Smith, D. C., Phares, V., (1989). "*Perceptions of Control at School Among Students in Special Education Programs*", Journal of Learning Disabilities, Vol. 22, No. 7, pp. 439 – 443.
- Taylor, L. M., Hume, I. M., Welsh, N., (2010). "*Labelling and self-esteem: the impact of using specific vs. generic labels*", Educational Psychology Vol. 30, No. 2, pp. 191 – 202.

- Terras, M. M., Thompson, L. C., Minnis, E., (2009). "*Dyslexia and Psycho-social Functioning: An Exploratory Study of the Role of Self-esteem and Understanding*", John Wiley & Sons, Ltd., DYSLEXIA 15, pp. 304 – 327.

- Tops, W., Glatz, T., Premchand, A., Callens, M., Brysbaert, M., (2020). "*Study strategies of first-year undergraduates with and without dyslexia and the effect of gender*", European Journal of Special Needs Education, Vol. 35, No. 3, pp. 398 – 413.

- Tunmer, W., Greaney, K., (2010). "*Defining Dyslexia*", Journal of Learning Disabilities, Vol. 43, No. 3, pp. 229 – 243.

- Vidyadharan, V., Tharayil, H. M., "*Learning Disorder or Learning Disability: Time to Rethink*", Indian Journal of Psychological Medicine, 2019.

- Zambo, D., (2004). "*Using qualitative methods to understand the educational experiences of students with dyslexia*", Qualitative Report, Vol. 9, No.1, [online at http:// www.nova.edu/ssss/QR/QR9-1/zambo.pdf].

- Zeleke, S. "*Self-concepts of students with learning disabilities and their normally achieving peers: a review*"

- Zoccolotti, P., (2013). "*Il contributo di James Hinshelwood alla comprensione dei disturbi acquisiti ed evolutivi di lettura*", Rivista internazionale di filosofia e psicologia, Vol. 4, n. 2, pp. 213 – 222.