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# The *phonological awareness* in EFLL.

## A compensatory measure for dyslexic students.

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**Indice**

“Every child has unique characteristics, interests, abilities and learning needs; education systems should be designed and educational programmes implemented to take into account the wide diversity of these characteristics and needs. Regular schools with this *inclusive* orientation are the most effective means of combating discriminatory attitudes, creating welcoming communities, building an inclusive society and achieving education for all.”

(*UNESCO, 1994*)

*Introduzione*

La dislessia e le principali difficoltà di apprendimento della lingua inglese all'interno del sistema scolastico convenzionale sono l'argomento dell'elaborato.

La dislessia è un disturbo specifico di apprendimento del quale esiste oggi, anche in Italia, maggiore consapevolezza, grazie alle numerose ricerche scientifiche effettuate negli ultimi anni e ai passi in avanti svolti dalla legislazione italiana nel riconoscimento dei disturbi specifici di apprendimento (DSA) come difficoltà che necessitano un processo educativo *personalizzato*.

Lo sviluppo, inoltre, di metodologie glottodidattiche che pongono lo studente e i suoi bisogni al centro del processo di apprendimento hanno contribuito notevolmente alla nascita del concetto secondo cui il sistema scolastico riveste il ruolo di *guida formativa* nel processo di educazione dell'alunno, soprattutto se affetto da dislessia.

La collaborazione tra neuropsicologia e glottodidattica, la cui necessità viene enfatizzata dalla nuova Legge 170/2010 (capitolo due), diviene, quindi, ancora una volta, strumento efficace ed efficiente, per migliorare il sistema scolastico e, indirettamente, una componente essenziale per la formazione dei cittadini di domani.

Secondo le Linee Guida Ministeriali allegate alla nuova normativa sui DSA (capitolo due), una delle chiavi di svolta nell'approccio a queste problematiche è la diagnosi precoce: esistono, infatti, dei segnali predittivi che possono essere indice di *possibile* presenza di dislessia il cui riconoscimento precoce può significativamente cambiare gli esiti del processo educativo di un bambino dislessico.

E' in questa fase che la figura dell'insegnante diventa cruciale: dal momento che i Disturbi di Apprendimento si manifestano palesemente nel

periodo della scolarizzazione, quando, cioè, l'apprendimento della lettura e della scrittura fanno affiorare, inesorabilmente, i primi insuccessi scolastici nei bambini affetti da questi difficoltà, è necessario che un docente sappia riconoscere i principali sintomi generalmente associati alla dislessia e, si incarichi di segnalarne la presenza alle famiglie, nel momento in cui le difficoltà riscontrate non migliorano, nonostante le attività didattiche individualizzate e personalizzate mirate al rinforzo delle abilità coinvolte.

La conoscenza delle indagini scientifiche condotte in questo ambito e la disponibilità di una diagnosi clinica sono, soprattutto nei primi anni di scolarizzazione, elementi indispensabili agli insegnanti per redigere eventuali piani formativi personalizzati e individualizzati.

La dislessia è una difficoltà che caratterizza chi ne è affetto per tutta la vita, ma limitare le difficoltà, attraverso dei piani educativi "ad hoc" e strumenti glottodidattici, più compensativi che dispensativi, permetterebbe loro di accedere all'acquisizione di strategie di apprendimento per migliorare le abilità di lettura e scrittura, senza le quali l'accesso alla conoscenza sarebbe loro quasi completamente precluso.

Questo elaborato, quindi, si focalizza sia sulla dimensione linguistica che psicologica dell'allievo dislessico (capitolo tre) nel processo di apprendimento della lingua inglese, attraverso l'osservazione e l'analisi di un caso di dislessia all'interno del contesto scolastico convenzionale (capitoli quattro e cinque).

Lo studio delle prestazioni e dei comportamenti di questo bambino ha fatto emergere quanto sia sottovalutata, a volte, l'osservazione strutturata delle potenzialità dei discenti per cercare di compensare le loro difficoltà ma, nello stesso tempo, quanto sia difficile districarsi tra le innumerevoli variabili che caratterizzano ogni singolo alunno.

Riteniamo, però, che sia proprio questo il compito principale dell'insegnante: "educare", "tirare fuori" dagli alunni, guidarli nella

scoperta degli strategie che permettono loro di avere accesso alla conoscenza, non solo nel loro percorso scolastico ma durante tutto il corso della loro vita.

L'abilità di comunicare efficacemente in lingua inglese rappresenta, innanzitutto, un prerequisito fondamentale per avere "successo" nella società plurilingue in cui viviamo attualmente, governata da ritmi di crescita incommensurabili, ma, in secondo luogo, l'apprendimento di lingue diverse da quella materna e la consapevolezza del concetto di "eterogeneità" sono delle componenti cruciali nel processo formativo di ogni alunno.

Numerose ricerche hanno dimostrato le forti difficoltà degli studenti dislessici nell'acquisizione delle lingue straniere: le loro difficoltà nei processi di decodifica e memorizzazione degli input linguistici, dovute soprattutto alla loro scarsa consapevolezza fonologica, pregiudicano significativamente il livello delle loro prestazioni, in particolare nelle lingue con ortografia opaca come l'inglese e il francese.

Il riferimento esplicito alla lingua straniera nella nuova normativa in materia di DSA (capitolo due) sancisce il riconoscimento da parte del legislatore nei confronti dell'importanza che riveste l'apprendimento di una lingua differente da quella materna, nel processo di educazione dei discenti affetti da dislessia.

Questo elaborato argomenta, quindi, attraverso ipotesi e riflessioni maturate dall'osservazione e l'analisi di informazioni raccolte sul campo, l'utilizzo di alcune strategie glottodidattiche che sono state applicate in questo caso specifico, mirate, soprattutto, allo sviluppo della consapevolezza fonologica nella lingua inglese.

Lo studio di un caso non consente di generalizzare ma, le scoperte effettuate dalle più recenti ricerche circa le ricorrenti scarse prestazioni delle abilità fonologiche dei discenti dislessici, e le strategie

glottodidattiche considerate più adeguate per migliorarle, hanno condotto alla scelta di alcune di queste strategie glottodidattiche (capitolo 3) per formulare riflessioni e ipotesi (capitolo 4) circa la loro applicabilità ed efficacia all'interno di piani didattici personalizzati (capitolo 5).

Gli studenti affetti da dislessia necessitano una fonodidattica *esplicita*, *strutturata* e *metacognitiva* nel processi di apprendimento della LS: l'efficacia del metodo multisensoriale (MSL) nell'insegnamento dei sistemi fonologico e ortografico della lingua inglese ad alunni dislessici è stata ampiamente dimostrata (J. Nijakowska, 2008; Ganschow *et al.*, 1998; Sparks & Ganschow, 1993; Schneider and Crombie, 2003; A. Sarkadi, 2008).

Le difficoltà di lettura e scrittura possono essere *limitate* attraverso strategie glottodidattiche di automatizzazione delle abilità: il metodo multisensoriale basa la sua efficacia sulla sintesi dello stesso input linguistico attraverso lo stimolo simultaneo di canali sensoriali differenti, favorendo la creazione di tracce mnestiche di tipologia diversa, alle quali il discente può ricorrere in fase di recupero del materiale linguistico. In questo modo, inoltre, lo studente ha la possibilità di esperire varie strategie glottodidattiche, sviluppando, progressivamente, maggiore consapevolezza circa quali siano quelle più appropriate al suo stile di apprendimento della LS.

I capitoli quattro e cinque dell'elaborato, assieme ai diari dell'insegnante (appendice) cercano di descrivere, in maniera chiara e strutturata l'applicabilità del metodo sensoriale ad un caso specifico di dislessia evolutiva, all'interno di un contesto glottodidattico di tipo ludico e metacognitivo.

# Chapter 1

## Specific Learning Disabilities: introduction.

Specific Learning Disabilities (SLD) refers exclusively to reading and writing learning difficulties, concerning both letters and numbers.[1]

[1] M. Daloiso (2012) claims that the terms “disabilities” and “difficulties” are often used as synonyms in the educational context, but, from a medical point of view, they represent two different pathological situations.

The first important distinction in SLD occurs between "*Specific* Learning Disabilities" and "*General* Learning Disabilities": the last ones have their origin from neurological and sensorial disorders (perceptive or sensorial disabilities, mental retardation, emotional disorders, disadvantage socio-cultural backgrounds…), which can impair several cognitive functions of an individual (J. Nijakowska, 2010).

On the contrary, Specific Learning Disabilities impair a *localized* ability or a limited number of skills, which are strictly related to learning development (S.M. Aglioti, F. Fabbro, 2006), while the functioning of other cerebral areas remains typical.

Specific and general learning disabilities normally differ in the results obtained in standardized IQ tests. General learning disabilities are usually diagnosed in pupils with IQ scores below seventy (J. Nijakowska, 2010). Despite the intense debate on the effective usefulness of the discrepancy between the IQ level and the ability to read and write, IQ tests tend to be treated as the main SLD indicator in clinical practice, in order to exclude general learning difficulties (Bogdanowicz, 2003b; Bogdanowicz & Krasowicz-Kupis, 2005b; Elliot & Place, 2000).

Initially, reading and writing skills need to be constantly experienced to become *automatic processes*, as well as any other cultural abilities, so that, generally, pupils with SLD have great *automatisation deficits.*

Children suffering from SLD mainly have "*decoding disabilities*", that are the incapacity of encoding and/or decoding (i.e. writing) (C. Cornoldi, 1999).

When learning abilities reach a high level of automaticity, they do not require particular cognitive and attention resources, actually becoming

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Additionally, the terminology for defining dyslexia varies a lot, according to the Country: "Learning Difficulties", "Learning Disabilities" or "Learning Disorders" are different terms to describe SLD.

In medical and psycho-pedagogical contexts, dyslexia is only classified as a "learning problem" (M. Daloiso, 2012).

“instrumental abilities”, which enable children to read and write any words and non-words (C. Cornoldi, 1999).

Dyslexic children are unable to develop automaticity like other pupils, because of neurobiological deficits; they need to be always concentrate on the accuracy and fluency of what they read and write, because they cannot exploit reading and writing skills as automatic processes.

SLD occur during the age of development and, for this reason, they are defined as *Developmental* Disorders. They can naturally appear at the beginning of the school career, because they influence reading and writing skills, which normally children learn in the first years of the Primary School.

On the other hand, they can be acquired, because of brain injuries or diseases, so that they are characterised by either total or partial loss of learning abilities, which the individual already possessed. In these cases, they are classified as *Acquired* Disorders (J. Nijakowska, 2010).

Students with developmental dyslexia have not lost their learning abilities because of an injury, but as a consequence of neurobiological factors (Bogdanowicz, 1989, 1999; DeFries *et al.*, 1987; Pennington *et al.*, 1986; Nicolson, 2001; Ramus, 2006; Hulme & Snowling, 2009).

Accordingly, they do not need a rehabilitation of learning abilities acquired before traumatic events, but they require an *education* about learning abilities “functioning”.

The International Statistical Classification of Diseases and Related Health Problems (tenth revision, 2007), provided by World Health Organization (WHO), defines SLD as “*Specific Developmental Disorders of Scholastic Skills*”, that are “disorders that prevent the normal generation of the learning competences, because they are inhibited *since the first stages of child’s development* (WHO, 2007).

Individuals with SLD often present disorders in several learning skills (comorbidity), indicating the frequent coexistence of different correlated learning difficulties in the same individual.

Generally, Specific Learning Disabilities regard reading, writing and calculation skills, because they require specifically decoding abilities (written language-spoken language).

The term "Specific Learning Disabilities" covers a wide range of difficulties but people often use it synonymously with "dyslexia".

Actually, SLD includes a group of learning problems, that have a precise denomination, according to the impaired ability:

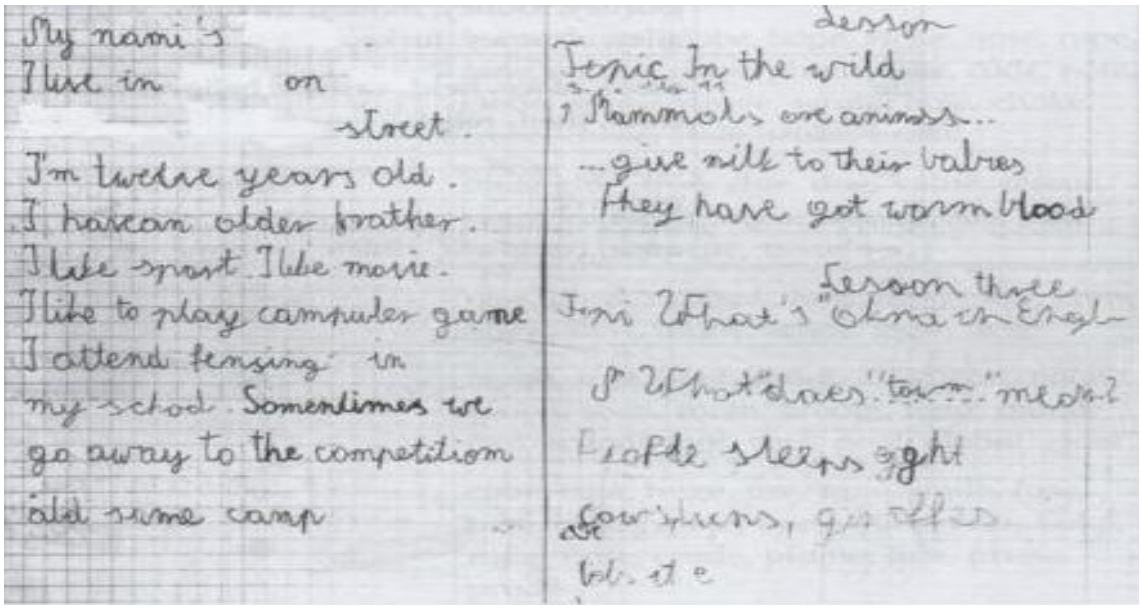
- dyslexia;
- dysorthography;
- dysgraphia;
- dyscalculia.

The object of this thesis is the "developmental dyslexia" and its complex nature in the language learning context (see paragraph 1.1). A critical evaluation of its multiple aspects necessarily involves a wide description and explanation with regard to several perspectives.

Initially, the notion of dyslexia can be considered as a narrow concept, comprising of a difficulty in *reading* or as a whole syndrome of difficulties in learning to read and spell (J. Nijakowska, 2010), but we intend to analyse different correlated aspects of developmental dyslexia.

Dysorthography and dysgraphia specifically occur in *writing* disorders situations: the first one is defined as an encoding problem of written texts, while the second one regards difficulties in motor-control process: macrographic and/or micrographic productions, frequent interruptions and numerous corrections are some typical symptoms of dysgraphia problems.

Dysorthography and dysgraphia disorders often occur together in the same individual.


My name's
I live in on
street.
I'm twelve years old.
I have an older brother.
I like sport. I like movie.
I like to play computer game
I attend fensing in
my school. Sometimes we
go away to the competition
and some camp

Lesson
Topic In the wild
1 Mammoths are animals...
...give milk to their babies
They have got warm blood

Lesson three
1 What's "Okna" in Engl
2 What does "town" mean?
People sleeps night
Cow's horns, g
bl. st e

*Figure 1.1 Sample of writing: two pages from the English language notebook; personal details were removed. (Taken from J. Nijakowska, 2010: 206).*

Nijakowska (2010) provides some written texts of dyslexic students: we present a sample of written text by a child who is twelve years old, because he is as old as the pupil, who we have observed in order to collect information for this thesis (see chapter 4).

Dyscalculia is a deficit in the recognition (reading) and processing systems (writing) of numbers and calculation.

SLD require a medical analysis to be diagnosed; neuropsychologists and speech therapists have the fundamental role of providing exhaustive information about the neuropsychological profile of pupils with SLD, in order to aid educators in the choice of the most adequate compensatory and dispensatory educational measures.

Therefore, the role of teachers is crucial, as well as the role of speech therapists and neuropsychologists, because educators represent the tutors during the first and third stages of the SLD treatment:

- *recognition*;
- *diagnosis*;
- *specific teaching/ learning methodologies application*.

Teachers should be able to recognise the main symptoms of learning disabilities (first stage) and apply an appropriate educational programme based on the guidelines of the clinical diagnosis (third stage).

The Guidelines on SLD (2011) of the Ministry of Education and University Research (MIUR) clarify that about twenty per cent of pupils (most of all in the first two years of Primary School) suffers from learning difficulties, but three to four per cent of these pupils actually have problems related to specific learning disabilities in their future school career.

Accordingly, the *early* distinction between learning difficulties and disabilities is a fundamental stage in the SLD treatment: pupils with learning difficulties acquire learning skills in a limited period of time, by means of specific teaching and learning activities of educational support.

On the contrary, SLD are lifelong disabilities and, for this reason, they need a constant specific treatment. Students with SLD need to "learn to learn": they need to know their main learning difficulties explicitly, and the most appropriate strategies in order to be successful in every kind of learning process.

### *1.1 What is "dyslexia"?*

The definitions of dyslexia are numerous, since it involves an interdisciplinary study of neuroscience, cognitive science and learning

theory, so that it seems to be a very controversial phenomenon (J. Nijakowska, 2010).

Additionally, the international literature on the causes and symptoms of dyslexia considers various aspects of this pathology, so that it is defined differently in different countries; accordingly, the complex etiological nature of dyslexia seems to become even more confused. Controversial aspects of literature on dyslexia are generally due to:

- the different theoretical models to whom SLD researchers make reference in the development of studies and research. Theoretical models of reference have influenced, most of all, the difference of thought about the causes of dyslexia (G. Sabbadini, 1995);
- the wide variability in the selection of the individuals; the gender, age, linguistic and cognitive skills of individuals are factors that can significantly modify the results of research;
- the poor information about clinical features of diagnosed individuals (G. Sabbadini, 1995);
- the features of the language to learn (J. Nijakowska, 2010). The orthography and phonology of a language widely influence the percentage of dyslexic individuals in the population (see paragraph 3.1.2).

The most objective definition of dyslexia derives from its etymological root: the term “dyslexia” is a word of Greek origin, composed by “dys” that means “to have difficulties with” and “lexicos” or “lexis” that means “words”. Accordingly, dyslexia literally means “difficulties with the words”.

Unfortunately, the etymological root does not give further information about its etiology.

Additionally, the words analysis and process involve simultaneously multiple elements, which can create complex linguistic and psychological situations.

The majority of international studies on SLD have used parameters of inclusion/exclusion[2], in order to favour, first of all, the distinction among different situations of learning difficulties.[3]

In the United States, one of the main diagnostic parameter, is the "discrepancy" criterion, that measures the difference between the standard level of reading skill of pupils and the real level of reading skill of the child in the moment of diagnosis.

If child's reading performance widely moves away from the standard level (at least two deviations from the norm), probably the pupil has problems related to dyslexia (S.M. Aglioti & F. Fabbro, 2006; G. Stella, 2004).

Beyond the diagnostic aim, it is really difficult to define dyslexia, because it is simultaneously characterised by multiple aspects. Accordingly, causes and symptoms can widely differ, because they strictly depend on the linguistic and psycho-linguistic features of individuals. Over the past few decades, a considerable amount of research has been applied to identify probable causes of dyslexia, and the progress in such scientific fields as neuroscience, brain imaging and genetics have confirmed several hypothesis, earlier lacking of empirical verification.

In 2002, the "International Dyslexia Association" (IDA), which is the first and greatest association devoted to learning disorders research, published the complete definition of dyslexia.

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[2] Diagnostic and Statistical Manual of Mental Disorders (DSM IV) defines dyslexia with parameters of exclusion: "Developmental dyslexia is a reading disabilities, in spite of the appropriate education, the lack of cognitive, neurological and sensorial deficits, and positive socio-cultural conditions.

[3] Aglioti and Fabbro (2006) provide a wide description of pathologies related to learning process, due to cognitive, neurological and sensorial deficits.

We have taken it into particular consideration, because the definition mentions the "key-concepts" about dyslexia and its implicit necessity of specific education measures.

> "Dyslexia is a specific learning *disability*[4] that is *neurobiological* in origin. It is characterised by difficulties with accurate and/or fluent word recognition and by poor spelling and *decoding* abilities[5]. These difficulties typically result from a deficit in the *phonological* component of language that are unexpected in relation to other cognitive abilities […]. *Secondary consequences* may include problems in reading comprehension and reduced reading experience that can impede growth of vocabulary and background knowledge" (IDA, 2002).

### *1.2 Dyslexia: "acquired" or "developmental".*

We provide a schematic description of "developmental dyslexia" and "acquired dyslexia", in order to clarify the principal differences between them, considering the main aspects of distinction between developmental and acquired dyslexia:

- *the period when reading problems occur*.

Acquired dyslexia occurs both in children and adults (rarely it occurs during childhood), because generally it is caused by brain injuries, cerebral or vascular ageing and sensorial deficits.

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[4] The term "disability" is used by American perspective to interpret dyslexia as a "disturbo specifico", but we emphasise that in Great Britain dyslexia is defined as a learning "difficulty", because several countries consider the "disability" as a mental or physical handicap.

[5] The concept of "abilità linguistica" includes two different notions in English, *skill* and *ability*, according to the dichotomy advanced by Widdowson (P.E. Balboni, 1999):

- the *"ability",* which is intended as a set of processes and strategies;
- the "*skill",* which implies the capacity of putting into practice processes and strategies.

We can emphasise that dyslexia difficulties do not involve language abilities but the language skills.

On the contrary, developmental dyslexia occurs during the development of the child[6], specifically at the beginning of the school career, when children learn, for the first time, to read and write. Accordingly, their reading difficulties emerge inevitably.

However, children have different learning rhythms, so that a backwardness in reading process development is not necessarily symptom of dyslexia.

Several children show learning difficulties, most of all in the first phase of the education, but they simply need more time to learn and a personalised educational support, capable of teaching them to understand their difficulties in reading process, in order to reach the automatisation of their learning abilities.

On the contrary, pupils with developmental dyslexia have lifelong reading problems. Any kind of reading skill improvement strictly depends on early diagnosis and specific educational treatment.

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[6] Developmental dyslexia manifest itself necessarily at the beginning of school, because it is related to principal learning skills, but it is possible to foresee dyslexia (G. Stella, 2004). Recent research about early signs of dyslexia confirms the existence of two principal elements of risk: the presence of a language backwardness or deficit ("language problems") and the familiarity, that is the presence of similar learning disorders in familiar antecedents.

[6] J. Nijakowska (2010) names several studies of predictor signals of successful reading development conducted at the beginning of pre-school education (Bryant and Goswami, 1990, Goswami, 1999; Snowling et al., 2003; Puolakanaho et al., 2008; Carroll and Snowling, 2004; Hulme at al., 2005; Vellutino, 2004; Ziegler and Goswami, 2006; Bowey, 2005; Krasowicz-Kupis, 1999), which empirically support the causal link between pre-existing early phonological skills (prior to reading instruction) and later reading achievement.

Apart from *phonological awareness*, certain attention was given to "*letter knowledge*, *short-term memory, rapid serial naming speed, pseudo-word* and *expressive vocabulary*, all of which qualify as powerful *predictors* of later reading achievement" (J. Nijakowska, 2010).

The early diagnosis does not allow to establish the presence of dyslexia with certainty, because individuals' learning rhythms and different teaching methodologies significantly influence reading development (G. Stella, 2004). Anyway, children with persistent learning difficulties in reading and writing skills need to receive early specific interventions, even if there is not a diagnosis.

- *The necessity of a specific education.*

Pupils with acquired dyslexia had already developed the decoding skill (reading skill), but it is lost or inhibited, because of a trauma of different kind (physical or psychological).

On the contrary, children with developmental dyslexia have never developed the decoding skill, because reading difficulties occur exclusively when children begin their school career. This last aspect emphasizes the fundamental function of early diagnosis, because it allows to intervene since pre-school period, before it could be too late to "plug" potential gaps correlated to reading disability.

- *The causes of reading disability.*

Literature usually used the term "acquired" with reference to dyslexia originated by injuries (S.M. Aglioti and F. Fabbro, 2006).

The causes of "developmental dyslexia" are still object of discussion and widely investigated from many standpoints, but the most recent findings confirm that developmental dyslexia has neurobiological origins (Bogdanowicz, 1989; Knight & Hynd, 2008; Schneider and Crombie, 2003; G. Stella, 2004).

- *The re-education/education of the reading skill.*

Acquired dyslexia entails a re-education of reading skills, which children already possessed integrally.

On the contrary, children with developmental dyslexia need to develop a skill that they never acquired before. For this reason, literature on developmental dyslexia speaks about "education", more precisely, "personalised education": a child with developmental dyslexia needs of specific interventions, in order to favour the development of automatic decoding process.

Generally, developmental dyslexia[7] is more frequent than acquired dyslexia, so that literature uses the term "dyslexia" to indicate "developmental dyslexia" (G. Stella, 2004).

*1.3 The developmental models of reading acquisition: the critical stages for dyslexic pupils.*

"The *skill* of reading letter strings consists on translating a visual code (orthographic) into a auditive one (phonological), which is semantically relevant if it corresponds to a known word" (S.M. Aglioti, F. Fabbro, 2006).
Stella (2004) clarifies the several stages of the reading process, in order to specify that dyslexic pupils have difficulties *exclusively* in the encoding process:

- the decoding process (G. Stella, 2004), which concerns the skill of converting the orthographical signs into spoken language;
- reading comprehension (P.E. Balboni, 1999; 2008) which is a cognitive ability based on the world knowledge, cognitive processes (e.g. logic relations of cause-effect, before-during-after…), the communicative competence and the expectancy grammar. To sum up, children need to possess many strategies based on inference and context, which they have by means of an appropriate development of the oral language (M. Daloiso, 2012).

Since developmental dyslexia is strictly related to the development of reading skill (decoding skill), consecutively we intend consider the main

[7] The object of this thesis is "Developmental Dyslexia". Accordingly, any further reference to dyslexia will allude exclusively to developmental dyslexia and its difficulties.

phases of reading learning, in order to understand what the critical stage for dyslexic children are.

There exist several reading models, probably because every developmental process depends on different variables, such as children's own experience with print, their cognitive styles and the kind of education received (F. Ramus, 2004).

Daloiso (2012) suggests a critical summary of different previous models on reading development (Marsh in Mackinnon and Waller, 1981; Frith in Patterson and al, 1985; Ehri in Bahr et al, 1991; Goswami, 1986):

- *logographic stage*; generally, it occurs during the pre-school period of children, when they have not either orthographic nor phonological knowledge. Nonetheless, children are able to identify some words as a whole, because they contain visual clues (the shapes and the visual context of some frequent letters, e.g. their names or the names of the family's members), or because of the influence of logos; famous brand-name articles are treated as holistic symbols, so that, for example, children may think that it is the colour and shape of the McDonalds' logo, and not the letters it contains, that allows to pronounce "McDonalds'" (Treiman, 2001). The diagram below represented explains how children process words: they treat words as well as any other visual object or symbols. Meanings are associated with visual shapes and features of words, which means that word recognition is considerably insensitive to letters order. Literature on reading development emphasizes that, in this stage, alphabet and phonics teaching are necessary to acquire an *explicit* knowledge of language sounds and their correspondences with letters (F. Ramus, 2004).

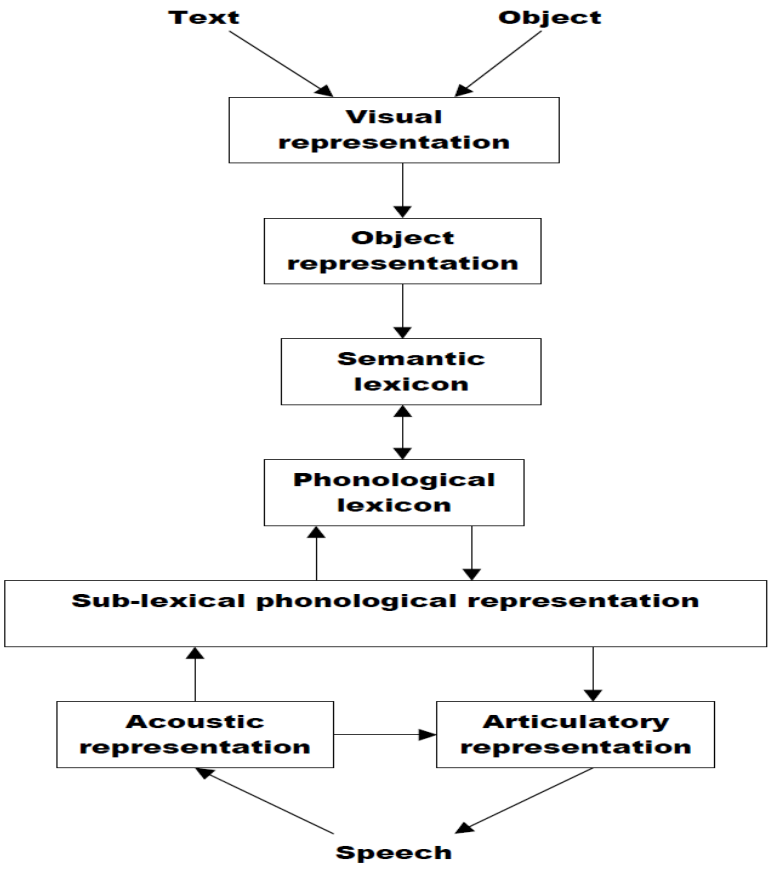


*Figure 1.2 The initial stage: logographic reading stage (Franck Ramus, 2004).*

One of the most important aspect of the diagram is the distinction between phonological lexicon and sublexical phonological representations; the latter is a temporary store for anything that can be represented in a phonological format and articulated, including words, phrases and nonsense sequences of phonological units (e.g. non-words).

- *Semiphonetic stage*; children begins to understand that there exists a relation between phonetic reproduction of a word and its graphic representation. Accordingly, in this stage children start to develop *basic* phonological awareness.
- *Alphabetic stage*; in the first years of the Primary School, children explicitly learn to analise words, gradually familiarizing with grapheme-phoneme correspondences.

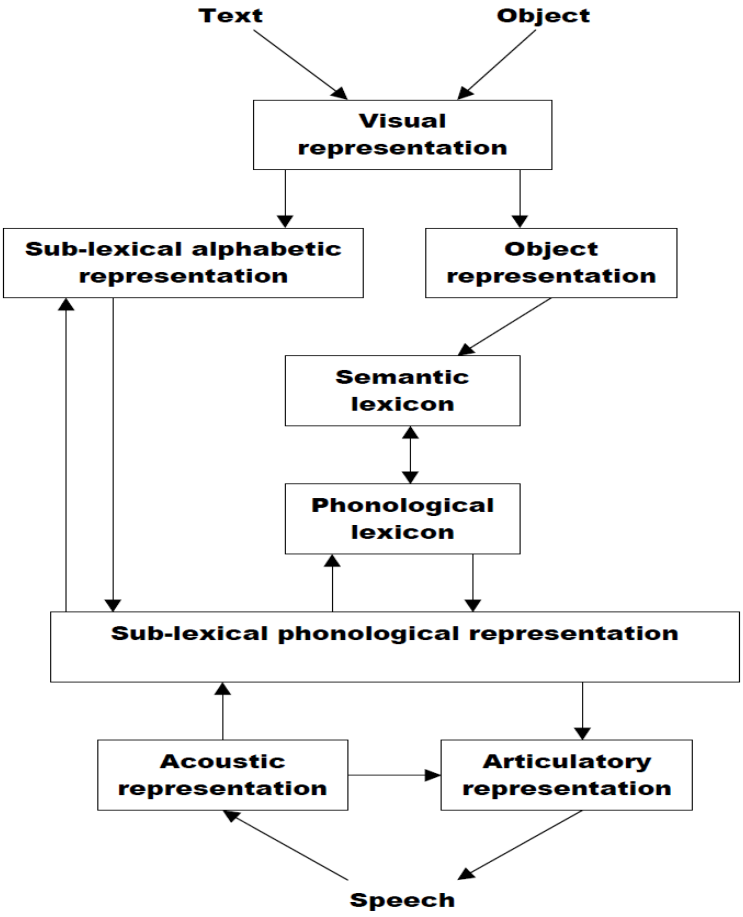


*Figure 1.3 An intermediate stage: the alphabetic reading stage (Franck Ramus, 2004).*

Children use the phonological route, that allows them to read new words (segmenting them into phonemes) and to write words by means of the first orthographic rules they are explicitly learning.

This stage of reading acquisition needs the development of the "phoneme awareness" (sub-lexical phonological level) and it is assumed to characterise naturally children of five and six years. Word recognition occurs mainly by phonological lexicon, so that reading requires letter-by-letter processing.

- *Orthographic stage*; children begin to analise words by means of orthographic rules[8], so that they are able to read difficult words. Children improve also their reading speed, because reading process occurs by letter clusters. Furthermore, the constant exposure to written language leads children to store the whole graphic representation of words (orthographical lexicon). Accordingly, since this reading development stage, word recognition occurs by means of the direct connection between orthographic and semantic lexicon, without using grapheme-phoneme conversion (at least, in the well-known words recognition). In the case of reading, as well as other cognitive processes, psychologists argue about two kinds of strategies development: "*bottom-up* processes are those that take in stimuli from the outside world -- letters and words for reading -- and deal with that information with little recourse to higher-level knowledge", while "with *top-down* processes the information is guided by individuals' prior knowledge and expectations" (Treiman, 2001:2).

  Alphabetic and orthographic stages are specifically controlled both by *bottom-up* and *top-down* strategies (M. Daloiso, 2012), because normally they work together, in order to ensure the accurate and rapid analysis of incoming information.

  Bottom-up strategies use letters analysis (phonetic forms), in order to reach the semantic interpretation of words, while top-down strategies use the semantic dimension of words to have access to their graphic/phonetic forms. Top-down processes allow children to comprehend words and texts regardless of grapheme-phoneme correspondence (J. Nijakowska, 2010), since readers form hypothesis

[8] Italian children learn that the grapheme <c> is pronounced /k/ before <a>, <o>, <u>, while it is pronounced /tʃ/ before <e>, <i>.

about which words they will encounter, and they take in just some visual information exclusively to test their hypothesis[9] (Smith, 1971).

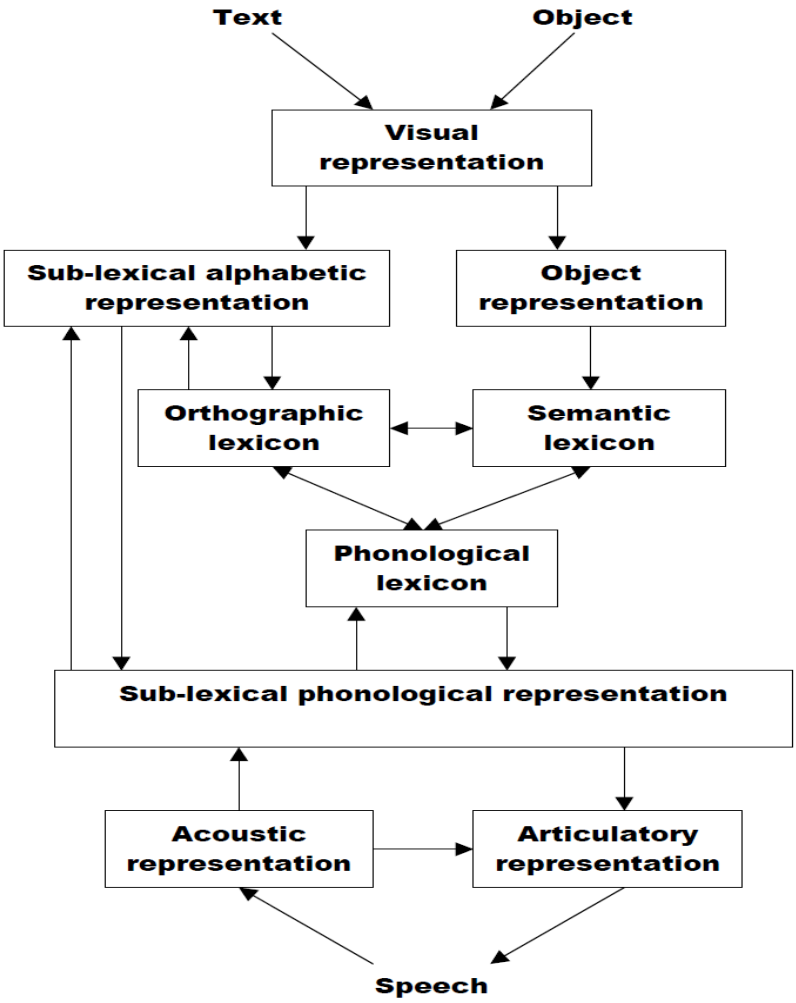


*Figure 1.4 The orthographic reading stage (Franck Ramus, 2004).*

Therefore, we can hypothesize that readers generally use their cognitive skills to predict the upcoming words in a sentence (mental lexicon).

Representing the set of written symbols means creating an orthographic lexicon, and these new representations need to be connected with semantic and phonological lexicons.

[9] Research has shown that poor and unskilled readers use context at least as much as good readers (Perfetti *et al.*, 1979).

In alphabetic systems, written symbols (graphemes) correspond to phonological units (phonemes); then, any string of letters can be mentally represented, which justifies the presence of a sub-lexical representation for letter strings.

- *Lexical stage*; at this stage, children have automatized the reading process, which allows them to learn and enjoy a wider lexical competence. Accordingly, automatic graphic recognition of words allows children to read more quickly; they use grapheme-phoneme conversion exclusively for reading unknown words and pseudo-words.

Research is currently focused on establishing what kind of relation occurs among the above mentioned stages.

Frith's (1985; 1986) model of reading acquisition in alphabetic systems hypothesizes a hierarchical progress of reading development: if children learn essential knowledge relating to logographic stage, consequently they are able to acquire reading competences relating to the next stage.

The fundamental concept of reading skill development is to consider any theoretical models not too rigorously, because children are characterised by many different developmental processes and the necessity to read continuously unknown words forces every reader to recur to the alphabetic stage.

Literature about reading acquisition refers to different developmental models[10], but most authors agree that *phonological awareness* is an essential prerequisite for the development of reading skills (Treiman, 2001).

[10] G. Sabbadini (1995) describes a research conducted by Stuart and Coltheart (1988) with children at the first stages of reading learning; findings demonstrate that reading ability development does not proceed necessarily from visual recognition to grapheme-phoneme correspondence, but a successful reading acquisition needs both knowledge about letter-sound correspondence and oral phonological abilities.

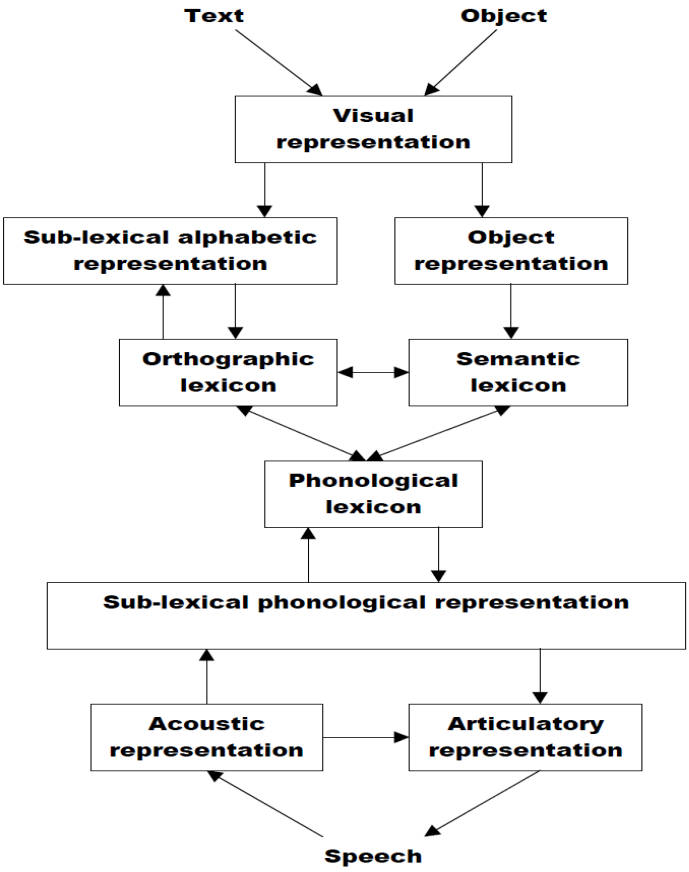


*Figure 1.5 An alternative intermediate reading stage without explicit phonological instructions (Franck Ramus, 2004).*

For those children who do not receive explicit phonological instructions it seems that they start elaborating directly an orthographic lexicon connected to the other two lexicon (Figure 1.4). Their reading system resembles that of children who have received instruction about phonics (Figure 1.2) except that sublexical phonological representation is implicit (F. Ramus, 2004).

Explicit phonological instructions would be a teaching strategy to *facilitate* reading acquisition in most of children, since it is widely believed that "automatic word recognition is critical to reading success" (Treiman, 2001: 8).

Furthermore, reading and writing are cultural achievements, while spoken language is a biological ability, which human beings naturally acquire by the exposition to the spoken language. Accordingly, learning to read

requires explicit instructions, because children need to learn to convert printed words into spoken language by learning increasingly phonological rules of their language. A large number of studies confirms that early explicit reading instruction generally yields to better results than programs that do not (Adams, 1990).

The chronological sequence (G. Sabbadini, 1995) of the stages, the mechanisms that allow the passage from a stage to the next one (M. Daloiso, 2012), the characteristic behaviour of children during particular stages (J. Nijakowska, 2010) are still object of controversy and research.[11]

The most crucial difference regards when and how children begin to rely on phonological information to recognise words (Ehri, 2005; Treiman & Kessler, 2007 in J. Nijakowska, 2010).

The most considered explanation of dyslexia is connected with the phonological system: a deficit in the phonological processing generally impairs the ability to read (Shankweiler & Liberman, 1972; Snowling, 2000; Stanovich, 1988; Vellutino, 1979).

The most recent hypotheses on dyslexia assume that dyslexic children have insufficient phonemes awareness, and, therefore, they have difficulties to reach the alphabetic stage of reading learning. The alphabetic stage is essential since phonological learning can significantly influence reading process development.

Early diagnosis of developmental dyslexia is really difficult before the beginning of the educational career (G. Stella, 2004), but not impossible, because the main problems related to dyslexia are already identifiable in

[11] Bryant and Goswami (Goswami, 1999; Goswami & Bryant, 1990) in their "causal theory of development of the ability to read", concentrate on specifying factors that condition progress in learning to read rather than on describing the phases of reading acquisition. Causal influence has been given to early phonological abilities, formal teaching of reading and spelling (grapheme-phoneme conversion rules), and mutual influence that reading and spelling have on each other (J. Nijakowska, 2010).

the pre-school period, by means of the appearance of predictor signs (J. Nijakowska, 2010).

However, some predictor signs (e.g. as regards language process development) are not necessarily present in children with developmental dyslexia.

Phonological awareness and lexical competence (M. Cardona, 2008) are the principal aspects, which demonstrates relevant discrepancy between reading skills of dyslexic children and standard processes of reading acquisition, because they are essential components of a successful reading development (M. Daloiso, 2012).

However, a poor lexical competence, per se, cannot be a sign of dyslexia (G. Stella, 2004), because children have different developmental times, most of all during the infancy.

On the contrary, a late phonological awareness development, most of all during *logographic* (visual memory of words) and *semi-phonetic* (knowledge of letter-sound correspondences) stages (*four-five years old*), represents, per se, a significant predictor sign of probable future developmental dyslexia (Reid, 1998 in J. Nijakowska, 2010).

Recent studies on reading development agree that, most of all in the first stages of reading skill development, the metaphonological competence, that is the conscious use of language sounds, is an essential support in order to learn strategies about letter-sound conversions (G. Sabbadini, 1995; M. Daloiso, 2012).

Poor phonological abilities in children with difficulties in reading process confirm how dyslexia needs specific teaching methodologies since the first stages of reading acquisition, in order to improve phonological abilities (Schneider and Crombie, 2003; J. Nijakowska, 2008; 2010; P. Kvilekval, 2011; M. Daloiso, 2012).

However, children with developmental dyslexia show several problems during the reading process: some dyslexic children read very slowly but accurately while some others make more reading mistakes, because they read quickly. Literature speaks about severe cases of dyslexic individuals, who read both slowly and inaccurately.

According to several developmental models of reading acquisition (in particular Coltheart, 1981 "*Dual Route Model of Reading*"), pupils are able to develop a specific module of decoding written language, exclusively at the end of developmental process of reading acquisition (lexical stage), that is when they can be defined as "experienced" readers, because the automatisation of their reading skill allows them to elaborate words by:

- the *visual route* (lexical), which allows to access orthographic representation of words, but their phonetic and meaning aspects as well. The use of visual route needs a wide lexical competence, since it is used uniquely to read well-known words (orthographic, phonological and meaning information are already been stored). Anyway, children are already able to activate visual route during logographic and alphabetic stages (M. Daloiso, 2012);
- the *phonological route* (sub-lexical), that allows to access exclusively phonological aspect of words, by means of a "letter-to-letter" or letter clusters recognition. The experienced reader uses phonological route for unknown words exclusively.

The visual and phonological routes are completely independent component of the decoding process.

Dyslexic children may have problems to develop either the visual or the phonological route. Pupils with visual route deficits manifest difficulties in the development of reading skill since semiphonetic and alphabetic stages,

while dyslexic children with impaired phonological route generally have problems with reading acquisition since the logographic stage, according to the severity of their disabilities (Daloiso, 2012).

### *1.4 Reading ability and dyslexic children.*

Spoken language acquisition is a biological ability, which all normal individuals naturally learn, without explicit instructions. On the contrary, the ability to read is a recent *cultural* achievement, dating back no more than five thousand years, which needs regular explicit instructions since early ages to be acquired.

Reading skill are acquired exclusively when they are automatized (lexical stage) and children can be defined as "experienced" readers, because they do not need specific cognitive and attention resources anymore (G. Stella, 2004).

An experienced reader accesses word pronunciation more quickly if it is written rather than to see the picture of the object, which the word represents (Brandimonte, 2009). This concept confirms how reading development could seem an easy achievement, since its process is quite imperceptible by children, but, actually, it is a very complex process, structured in several intertwined stages (G. Stella, 2004):

- recognition of orthographic signs;
- knowledge about rules of grapheme-phoneme conversion;
- conversion of phonemes into words;
- comprehension of the meaning of sentences and texts.

Dyslexic children have relevant difficulties exclusively in the first three phases of reading process, because their disability involved directly the *decoding stage,* from written code into spoken language.

The meaning comprehension of printed words strictly depends on the successful development of these first stages.

Dyslexic children often read slowly, in order to proceed accurately, so that their attention is completely concentrated on recognising orthographic signs, applying rules of grapheme-phoneme conversion, and converting single sounds into spoken language.

Accordingly, comprehension activity is generally poor, because attention and cognitive resources are all previously used.

Since dyslexic children's reading is not automatic in spite of the constant reading training, it cannot become an "instrumental ability" for them, capable of facilitate the access to the meaning of words in context and, accordingly, the enhancement of lexical repertoire.

Dyslexic students always need great mental and physical efforts during reading tasks, because they necessarily require high level of sustained attention and cognitive resources to process letter strings. On the contrary, non-dyslexic pupils do not need particular attention and cognitive resources to read known words, because their reading process is automatic, and, as a consequence, their wider lexical repertoire allows them to recognise and understand more easily words, sentences and texts (G. Stella, 2004).

Achieving automaticity in reading process represents one of the main problems of children suffering from dyslexia, who are compelled to recur constantly to cognitive and attention resources to perform reading tasks.

Language words are represented by a set of symbols, which, in order to be understood and pronounced, need to be mentally stored, and connected to the corresponding mental lexicon (F. Ramus, 2004). Generally children develop two mental lexicons:

- the semantic lexicon, where the *meanings* of words are stored;
- the phonological lexicon, where speech is represented by abstract elements (*sounds*).

The ability to recognise orthographical signs and make up or break up letters, syllables and words, and convert graphemes into phonemes (phonological skills) require necessarily the integrity of the principal systems involved in reading process: the *visual recognition system* of orthographic signs and *phonological skill* (G. Stella, 2004; P. Kvilekval, 2011, Schneider & Crombie, 2003; J, Nijakowska, 2008, 2010, A. Sarkadi, 2008).

Firstly children need to perceive the different sounds of their language (phonological awareness), and, afterwards, phoneme-grapheme correspondence (language phonetic). Accordingly, phonological and phonetic rules necessarily need to be teached directly. Children who lack phonological awareness have great difficulties in developing reading skills (P. Kvilekval, 2011; Treiman, 2001).

Literature about dyslexia is often related to *alphabetic languages*, where graphemes (letters) are sound units (phonemes), but not meaning units.[12]

In alphabetic languages, dyslexic students have difficulties in *phonological-orthographic process* (J. Nijakowska, 2010), since, as we have above mentioned, the comprehension ability is not *directly* related to reading disabilities of dyslexics, but occurs as a consequence of the deep difficulties of reading process and of poor lexical repertoires.

Alphabetic languages divide themselves into “transparent” and “opaque”, according to the typology of grapheme-phoneme correspondences.

[12] Ideographic language systems (e.g. Chinese) have not grapheme-phoneme correspondence. Graphic symbols are both sound and meaning units.

Italian is defined as a transparent language, since its grapheme-phoneme conversions allow to write and spell any words; homophonous but not homographic words are rare (e.g. “hanno”/”anno”, “lago”/”l’ago”), so that children can memorise them easily.

On the contrary, English (see 3.1.2) or French are classified as opaque languages, because their phonemes can be represented by different graphemes (single letters or letter clusters), so that the pronunciation of the same graphemes often differs according to words, because of the proximity of particular graphemes into the word.

Accordingly, grapheme-phoneme correspondences are numerous and they need excellent phonological (see 3.1.1) and memory skills (see 3.1.3.).

Since we live in modern societies, which consider foreign language learning as an essential cultural aspect of any individual, phonological features of languages should be the unique cause of the existence of different dyslexia definitions and different education methodologies for dyslexic students.

On the contrary, international literature on dyslexia speaks about different causes, conditions and measures of identification, so that reading and spelling disabilities lose concreteness and importance.

A universal point of view about dyslexia causes and difficulties could simplify significantly both recognition and diagnosis of dyslexic children and, consequently, the development of specific educational curricula.

From this teaching perspective, we intend elaborate this thesis, in order to favour English foreign language learning for dyslexic students.

### *1.5 Historical notes and statistical incidence on dyslexia.*

Until 1890, studies on dyslexia focused exclusively on acquired reading disabilities: the term "dyslexia" was used, for the first time, by Berlin, a German doctor who, in 1872, described the clinical case of a patient suffering from dyslexia caused by cerebral injuries. Later, in 1877, Kussmaul defined reading disability as a "word blindness".

Many other studies on dyslexia occurred until 1917, when Hinshelwood, an English eye-specialist surgeon, hypothesized that dyslexia was a congenital disability.

He used the term "word blindness", minted by Kussmaul, referring to dyslexia, and he emphasized the fact that reading and spelling disabilities were not a rare occurrence among individuals, who had the possibility to receive an educational instruction.

Hinshelwood claimed that dyslexia seemed a rare pathology exclusively because of the lack of information about reading disabilities, so that recognition and treatment of dyslexic individuals were difficult.

In 1920, Samuel T. Orton, who is considered as the "Father of Dyslexia", significantly contributed to the enhancement of awareness about reading and spelling disabilities by public opinion, by means of a relevant research movement creation.[13]

He published many papers on dyslexia from 1925 to 1946: although reading disabilities were not already called "dyslexia", Orton described the same reading disorders we refer to nowadays.

It was an innovative concept of reading disabilities if we consider that the idea of developmental dyslexia as a visual-spatial deficit has been considered by several scholars the main cause of dyslexia up to thirty years ago.

Nowadays phonological aspects (phonological awareness, phonological memory, modalities of access to phonological-lexical information) are the

[13] Orton Society (1949), renamed Orton Dyslexia Society in 1982, is the former name of the current International Dyslexia Association (IDA), created in 1997.

principal topics of literature and studies about dyslexic individuals' deficits and educational treatment (G. Stella, 2004; Kormos & Kontra, 2008; Schneider & Crombie, 2003; J. Nijakowska, 2010; P. Kvilekval, 2011).

Recently, public opinion is aware of dyslexia as a reading process pathology, because the educational system has revealed a significant percentage of children, who suffer from specific learning disabilities.

In spite of the enhancement of literate people in modern societies, the percentage of dyslexic individuals is the same (G. Stella, 2004).

About 2-2.5 per cent of Italian population manifests developmental dyslexia; literature mentions several percentages, because data have been collected by different criterions of observation and different theoretical models of diagnosis.

In addition, at Primary School pupils have various rhythms of development, so that reading learning process can widely differ, and not all the children with reading difficulties have necessarily reading disabilities.

During the first year of Primary School, generally the number of dyslexic pupils is low, because early identification of reading disorders can be influenced by several factors.

During the third year of Primary School dyslexic children reach the most elevated percentage. It remains static during the fourth year, but it decreases at the fifth year (G. Stella, 2004). Decrease of dyslexics' percentage at the last year of Primary School clearly shows the possibility to improve reading and spelling difficulties of children suffering from slight forms of developmental dyslexia. Accordingly, early diagnosis and specific education measures can concretely help dyslexic pupils.

The percentage mentioned above (2-2.5 per cent) represents an average of Italian dyslexic individuals. It is clearly lower than other countries[14],

[14] Dyslexia Research Institute points out that, in the United States, about 10-15 per cent of school population suffers from dyslexia.

because Italian orthographical system is quite regular, so that it facilitates reading and writing learning process.

Italian clinical psychology tends to consider developmental dyslexia primarily as a disorder related to emotional and social individual factors.

Psycho-emotional factor is a relevant component in dyslexic children, most of all in the school context; accordingly, educators need to know the crucial distinction between causes and consequences of dyslexia, because dyslexic pupils are *erroneously* often defined as lazy children.

Actually, continuous school failures inevitably exert a negative effect on dyslexic students' behaviour towards education context, so that they prefer completely avoiding reading and writing activities, which represent increasingly source of frustration for them.

### *1.6 Causes and conditions of developmental dyslexia.*

One of the principal criteria of diagnosis (used especially in the United States) is the "discrepancy" criterion, which compares intelligence quotient (IQ) with reading skills level.

Child psychiatrists and speech therapists are qualified to diagnose specific learning disabilities by standardized tests, which estimate learning skills level.

In Italy, the main aspects of reading process, which speech therapists consider to diagnose the occurrence of dyslexia are:

- the decoding speed (number of syllables per second);
- the accuracy (number of mistakes).

Reading accuracy is an aspect which can be increasingly improved by means of specific teaching measures. On the contrary, decoding speed tends to be stable: dyslexic pupils, who are slowly[15] in reading tasks, tend to maintain this feature in spite of specific speech therapists' education (G. Stella, 2004).

World Health Organization has defined five necessary conditions to classify a learning disability as dyslexia, because general difficulties in reading acquisition are not sufficient to determine the presence of this learning problem.

- Intelligence Quotient at standard levels;
- reading skill significantly lower than children, who are the same age or attend the same school year (at least two years);
- lack of neurological or sensorial deficits, which could justify indirectly reading difficulties;
- persistence of reading disability, in spite of appropriate education methodologies;
- presence of socio-psychological problems and scholastic failures as indirect consequences of dyslexia.

Reading process requires great and continuous attention and concentration if it is not used as an "instrumental" skill, that is when an ability is completely developed and automatized.

The first stages of reading development are clearly difficult for any children, because they have to *learn* a process, that needs constant training to become automatic, as well as other processes, which are not biological but cultural achievements (e.g. walking, cycling or driving).

[15] Dyslexic children have different reading features: they can read slowly but accurately, or quickly but making several mistaken.

Nowadays, the *neurobiological*[16] nature of developmental dyslexia is widely recognised, by means of autopsy studies of patients, who suffered from severe difficulties in reading learning and, afterwards, by means of the brain imaging instruments, which allow to visualize neurological system activity specifically during reading tasks (C. Umiltà, 2011). Accordingly, some possible neurobiological deficits of dyslexic students can be isolated just during reading process.

In 1985, Albert Galaburda, an American neurologist, found little alterations on the cortical tissue of cerebral areas, which are specifically involved in the language process, by means of autopsy on dead individuals, who suffered from reading learning difficulties. Sabbadini (1995) explains that the morphological alterations found by Galaburda were mostly situated in the Broca's Area and Wernicke's Area, which are both significantly responsible for the oral and written language development. Recently, specific studies conducted by means of Nuclear Magnetic Resonance (NMR) have confirmed Galaburda's findings, which assumes the presence of structural variations in localized cerebral areas of dyslexic individuals.

Afterwards, molecular genetics findings have meticulously defined these alterations as the clues of *particular genetic features*, but not as lesions.

*Genetic theory* is one of the most recent shared attempts to explain empirically the causes of dyslexia. It states the relation between "the occurrence of the disorders and inherited *anatomical* and *functional features* of the *central nervous system*" (J. Nijakowska, 2010:35). This theory was first described by Bogdanowicz (1989) and Spionek (1985), but afterwards several genetic studies have confirmed that about 20-30 per cent of the cases of dyslexia are genetically conditioned (Bogdanowicz, 1999; DeFries *et al.*, 1987, Pennington *et al.*, 1986).

[16] Neurobiology is a branch of biology which deals with the anatomy, physiology and pathology of central nervous system.

Accordingly, the awareness of a family history that attests struggle with reading acquisition may be a condition for early assessments (G. Stella, 2004; J. Nijakowska, 2010).

Although numerous studies about what cerebral localizations and functions are responsible for reading disabilities, scholars have not found a solution by mutual consent.

Certainly, there is general agreement about neurobiological origins of dyslexia, with specific reference to genetic construction of individuals (G. Sabbadini, 1995; G. Stella, 2004; Knight & Hynd, 2008 in J. Nijakowska, 2010).

Children of dyslexic parents can be at significant risk to reading problems; clinical diagnosis analysis shows that dyslexic pupils frequently have a parent suffering from reading disabilities (G. Sabbadini, 1995).

Furthermore, genetic theory is confirmed by the relevant difference between genders among the cases of dyslexia: three quarters of dyslexic individuals are of male gender (G. Stella, 2004). This percentage expresses that male gender is genetically more prone than female gender to reading disabilities development.

As mentioned before, it exists great disagreement about cerebral functions and localizations directly involved by developmental dyslexia, but nowadays phonological awareness, and additionally visual process, are generally considered as the main systems, which characterise reading disabilities. Certainly, dyslexia does not necessarily involve both the systems development.

Recent neurobiological findings on dyslexics' brain functioning, demonstrate the complexity of *neuroanatomical* features of reading disabilities, so that literature cannot reduce them to a unique area of the brain (Galaburda *et al.*, 2006 in J. Nijakowska, 2010).

Since the multiplicity of variables involved, it is necessary an explication of causes, which considers different aspects of dyslexia[17].

Nowadays, the most examined theory about developmental dyslexia is the *phonological deficit hypothesis (Snowling, 1987)*, which relates reading disabilities to poor phonological processing (implicit phonology)[18].

Recent studies on phonological deficits of dyslexic individuals have allowed relevant progress compared to previous research, which considered reading disabilities exclusively as visual deficits.

The verification of phonological deficit hypothesis has generated numerous empirical studies, whose main aim is confirming the effectiveness of early phonological education in the treatment of reading skills problems (Krasowicz-Kupis, 2008).

Phonological processing difficulties of dyslexic children are well-documented (Hoien & Lundberg, 2000; Hulme *et al.*, 2005; Lundberg, 2002; Ramus *et al.*, 2003; Snowling, 2001a, 2001b; Szenkovits & Ramus, 2005; Vellutino *et al.*, 2004): the degree of phonological deficits severity causes several differences among dyslexic children.

The phonological deficit hypothesis is the most studied theoretical cause of dyslexia and, as a consequence, it does not avoid scholars' criticism; despite several studies conducted in order to support the theory of phonological deficits as one of the main cause of reading disabilities in dyslexics, literature describes other factors which may play a causal role: one of the main weak aspect of the phonological deficit hypothesis is its

[17] Daloiso (2012) presents a critical summary of the principal theoretical models about dyslexia causes. We intentionally consider the cognitive model, because it focuses on the linguistic nature of individuals, especially on phonological competence of individuals.

[18] Phonological processing is an implicit skill, because it refers to children using speech, without reflecting on the structure of spoken words (Hulme & Snowling, 2009).
On the contrary, phonological awareness is explicit, because it is the ability to perform explicit judgements with regard to the structure of spoken words and it refers to all kinds of tasks on speech sounds, engaging memory, analysis and synthesis of phonological elements (J. Nijakowska, 2010).

inability to explain general motor and sensory difficulties in children with dyslexia (J. Nijakowska, 2010).

However, phonological deficits occurrence without the presence of sensory and motor deficits (visual, auditory and motor) was observed by empirical studies on children suffering from dyslexia (White *et al.*, 2006; Ramus *et al.*, 2006), so that nowadays literature considers phonological deficit hypothesis as the *primary* cause of dyslexia, because it can itself explain *all cases* of reading disabilities (J. Nijakowska, 2010).

To sum up, phonological deficit hypothesis can explain objective disabilities of dyslexic pupils, but it is not capable to account for all the typical difficulties of dyslexic individuals, and, most of all, individual differences between dyslexics: the fact that some dyslexic children read slowly but accurately, and some others read quickly but inaccurately conducts scholars to not share the exclusive and primary nature of phonological deficit as a cause of reading disabilities.

The *double-deficit hypothesis* (DDH), which nowadays has relevant consideration by means of the recent studies conducted by Wolf (1999) and Wimmer (1998), proposes the existence of two independent sources of dyslexic difficulties: the *phonological deficit* and the *naming speed impairment.*

The first deficit accounts for inaccurate reading, because it makes grapheme-phoneme conversion difficult, while the second one causes slow reading, because linguistic information retrieval from the long-term memory system is significantly slow.

Naming speed impairment seems to refer particularly to sublexical units retrieval, such as syllables and morphemes (Daloiso, 2010).

Therefore, the claimed independence between naming speed skills and phonological processing ability could exhaustively explain different reading features in dyslexic individuals; according to the presence or

absence of these deficits, dyslexic children can be categorised into three subtypes (Wolf & Bowers, 1999):

- naming speed deficit subtype refers to dyslexic pupils with standard phonological skills, but with poor naming speed;
- phonological deficit subtype concerns poor readers, who suffer solely from phonological processing disorders but normal naming speed;
- double-deficit subtype is characterised by poor abilities both in phonological processing and rapid naming.

Generally, scholars consider double-deficit hypothesis as a more detailed definition of phonological deficit hypothesis, because fluency and words retrieval during reading process are strictly related to phonological awareness development.

In addition, most of the several studies conducted on dyslexic children does not confirm the coexistence of phonological deficits and naming rapidity, because pupils with accurate reading performance manifested slow reading speed, with regard to the control group (Daloiso, 2012).

The most recent theory about dyslexia causes is the *automatisation deficit hypothesis*. Fawcett and Nicolson (2001, 2004, 2008) argue that problems which characterise dyslexic individuals may be attributed to the automatisation deficit, capable of explaining both reading impairments and poor phonological processing, but also other typical dyslexics' difficulties, not exclusively related to the linguistic dimension.

Additionally, automatisation deficit theory can account for the frequent coexistence of different specific learning disabilities in the same individual. Generally, reading and writing (letters or numbers) are automatic process, but, in SLD context, they become very complex tasks, because they need continuous attention and control. Nicolson and Fawcett's hypothesis

focuses on another typical feature of dyslexic children related to the automatisation aspect of learning abilities: children suffering from dyslexia have great difficulty to keep high level of attention for long period of time.
It has been demonstrated (Fawcett *et al.*, 1996; Fawcett & Nicholson, 1999) that dyslexics perform worse than non-dyslexics on a wide range of activities, which present the same features of reading, spelling and writing process:

- *necessity of high level of automatisation*, in order to be acquired (e.g. counting tasks does not require attention and concentration to be process exclusively when numbers processing is acquired (automatized), as well as walking, cycling or driving;
- *involvement of implicit memory system* (Aglioti & Fabbro, 2006; Cardona, 2010), which allows the *unconscious* acquisition of modalities without any particular effort;
- *involvement of cerebellum*; some scholars speaks about "Cerebellar Deficit Hypothesis" (J, Nijakowska, 2010), that focuses on brain mechanisms of dyslexic children. Traditionally, the cerebellum has seen as an area involved in learning and automatisation of motor skills, but recently, empirical studies have demonstrated that cerebellum is a fundamental area for linguistic and cognitive processes. Empirical studies on dyslexics' problems have led to the formulation of the above mentioned "automatisation deficit hypothesis", which specifically claims that children with dyslexia find abnormal difficulties to make *any* skill automatic, despite extensive practice, regardless of the nature of skill, cognitive or motor (Nicolson & Fawcett, 1990, 2001).

Since the great amount of research, it seems that a universal causal explanation of dyslexia still is difficult, because of the multiplicity of

variables and aspects that this pathology involves. Since this learning deficits penalize dyslexic children education, we intend to emphasize the importance of cooperation between scholars and educators, in order to elaborate specific teaching and learning measures and methodologies based on current empirical information for favouring dyslexics' success.

*1.7Psychological dimension of dyslexic children.*

> *"C'era una volta un bambino qualunque che tutte le mattine si alzava per andare a scuola piangendo. Appena si svegliava cominciava a lamentarsi: "non voglio andare a scuola perché mi prendono in giro!... la maestra mi dice sempre che non voglio impegnarmi!... Matteo mi prende sempre le matite e allora io lo picchio…". La mamma era molto preoccupata perché il suo bambino era sempre stato allegro e socievole, di carattere docile e da qualche tempo, in effetti, la maestra continuava a chiamarla per dirle che il bambino qualunque picchiava sempre i compagni, non stava mai fermo, non voleva scrivere. […] Come mai il bambino qualunque, che non aveva mai avuto modo di farsi notare alla scuola materna, in pochi si era trasformato nel terrore della classe?"* (G. Stella, 2004:7).

Stella (2004) describes the *true* story of a dyslexic child, who begins his education career in the Primary School, defining it as "*the misunderstanding of dyslexia*".

The appearance of an unexpected difficulty often creates misunderstanding by parents and teachers, but, most of all, frustration and psychological confusion in children, who previously have never had relevant behavioural problems.

At the beginning of Primary School, dyslexic children, who first were ordinary pupils, become unexpectedly *particular* children, because they necessarily have to learn reading and writing process. This crucial stage of

education career implicitly causes the appearance of dyslexic pupils' psychological and behavioural modifications.

Suddenly, dyslexic children are in a school context which is completely unfamiliar, and teachers ask them to do something they are not able to process. The passage of time inexorably emphasizes the difference between them and their classmates in the learning abilities development. Scholastic failures continue recurring, in spite of the great physical and psychological efforts to be successful.

Accordingly, a deep sensation of unease and incompetence increasingly prevail over dyslexic pupils, manifesting itself by frustrated and lazy behaviours. Teachers often interpret dyslexics' behaviour exclusively as laziness, but they do not take in consideration dyslexics' psychological dimension.

Samuel Orton was one of the first scholar to argue about emotional aspects of dyslexia; he emphasizes that the beginning of Primary School is the crucial period of the first evident appearance of specific learning disabilities, whose severity constantly worsen together with the sensation of frustration and unease, without specific clinical and teaching treatments (International Dyslexia Association, 2004).

Recent studies on dyslexia and foreign language learning demonstrate that language learning disabilities are "a cause for affective differences, such as anxiety and low motivation" (E. Piechurska-Kuciel, 2008:87).

Before 1980s, the Italian clinical psychology stated that affective problems of dyslexic children were the cause of their learning disabilities.

In the last years, studies on specific learning disabilities are considerably increased and they allow to have a wider perspective of cognitive, neuroanatomical and neurophysiological aspects of dyslexia, so that it is more simple comprehend how continuous frustrations and failures could lead to behavioural disorders.

Italian clinical psychology still considers psychological problems of dyslexic children as crucial aspects of this pathology, probably because psycho-emotional clues are often more evident than reading disabilities, and, most of all, they are always present in pupils with dyslexia (G. Stella, 2004).

However, we intend to follow neuroscience theories, because developmental dyslexia is a neurobiological pathology, which characterizes children since their birth, but presents itself by social and affective problems exclusively since Primary School beginning. Therefore, it is clear that dyslexia is often the cause of behavioural disorders such as low self-esteem, self-concept and self-confidence, a dependent personality, in conjunction with higher than average anxiety, emotional insecurity and depression (McNulty, 2003). Consecutively, we introduce the main psychological problems of dyslexic students from a teaching methodology point of view; since teachers have the crucial role of identifying children at risk, they have to be able to recognise all the symptoms of dyslexia, most of all, in a crucial perspective of early diagnosis as a fundamental instrument of support for children with this pathology.

*1.7.1 Language Anxiety of dyslexic students in EFLL.*

Anxiety is the most frequent symptom of students who have to learn new school subjects, most of all, if the education career is always been characterised by failures.

We focus on foreign language learning, considering its psychological importance for dyslexic children, since it represents the possibility to start again, without failures, just from the same level of other classmates.

Accordingly, the level of anxiety of dyslexic pupils is always over the standard average, because of the great affective involvement they prove.

Teachers have to consider psychological components when they elaborate personalised teaching programmes, by means of specific education measures, in order to favour the creation of a positive approach towards foreign language learning, and avoid further frustrations and negative experiences of disease in the school context.

Some scholars postulated the phenomenon of the "*language anxiety*" (Horwitz *et al.*, 1986), which consists on a specific typology of anxiety strictly related to the language learning context.

Language anxiety, that is not generated by a specific psychological feature of the learner, leads to perceive learning process as the single cause of anxiety and danger.

Recent studies on developmental dyslexia (E. Piechurska-Kuciel, 2008) have confirmed that language anxiety of dyslexic students during foreign language learning is over the non-dyslexics' levels and, most of all, it remains high during all the stages of learning process (input, processing, output), while, generally, non-dyslexic pupils have high degree of anxiety exclusively during the first and the last stages.

Therefore, these findings show that students with dyslexic symptoms normally suffer from greater anxiety than students without developmental dyslexia, because dyslexics are generally characterised both by *trait anxiety*, that is anxiety caused by language deficits, and *language anxiety*, which is specifically caused by the uniqueness of language learning situation.

Piechurska-Kuciel (2008) assumes that these two types of anxiety interact in dyslexic children to create "an additional anxiety value, which could explain higher anxiety levels in dyslexia symptomatics".

Previous research findings on affective consequences of dyslexia (Sparks & Ganschow, 1996; 2000) tends to confirm the above mentioned results.

Language anxiety may be present in any student during foreign language learning, because of the linguistic challenges that a student faces; additionally, dyslexic children have another type of anxiety (trait anxiety), that may be considered as a feature of the anxious personality of the dyslexic student, and is a behavioural expression of developmental dyslexia.

As the findings show, affective differences in dyslexic pupils, language anxiety among them, are "the result rather than the cause of FL learning problems" (Ganshow *et al.*, 1998:248).

Accordingly, foreign language teachers' education should include a part aimed at knowing affective problems correlated with developmental dyslexia, in order to develop and favour positive experience development. Additionally, it aids teachers work better, because self-esteem and learning motivation can significantly influence dyslexic children improvement.

Foreign language teachers' awareness of affective and linguistic problems of dyslexics becomes a crucial aspect, because children with dyslexia need specific teaching methodology, capable of improving learning abilities, compensating learning deficits by means of appropriate teaching measures, and creating positive attitude towards foreign language learning.

Initially, most of dyslexic pupils are defined as lazy children by teachers and parents, because they do not take part actively to class lessons or avoid doing homework. Punitive approaches by teachers and parents, caused by wrong or lacking knowledge about dyslexia, can seriously worsen both psychological and linguistic situation that normally characterised dyslexic students.

### *1.7.2 Low-motivation of dyslexic children.*

The "motivation" is a fundamental aspect of any successful learning process, because it favours the *acquisition* of incoming information (Balboni, 2003).

Balboni (2003) and Caon (2006) assume that learning *motivation* strictly depends on three psychological factors, which generally regulate daily human behaviour, but that can easily be applied to learning process:

- the sense of duty; it usually occurs in the traditional scholastic context, where students learn exclusively in order to do homework and pass exams. Accordingly, language learning does not lead to acquisition, but to a temporary information storage;
- the sense of need; it is a crucial factor of motivation during language learning, but it loses its importance when students consider that their need has been satisfied;
- the sense of pleasure; it is the most effective motivation because it involves both the right and the left hemispheres in language learning process.

At the beginning, dyslexic pupils naturally have high degree of motivation during foreign language lessons, because FL represents for them an opportunity to be successful students. The sense of need and pleasure can be positively used by teachers in order to stimulate children's motivation and involve them in the FL learning.

Accordingly, teachers have the role of maintaining this degree of motivation, by means of both specific teaching methodologies (multisensory language instruction) and positive education context, which can significantly facilitate language acquisition and psychological development of children with learning disabilities in mainstream education.

Teachers have to consider motivation as a crucial aspect of their foreign language lessons, trying to use increasingly *playful* teaching methodology as an undeniable instrument particularly with dyslexic children[19]. Dyslexic children live positively challenges exclusively if they do not perceive anxiety and fear of making mistakes. Accordingly, playful teaching methodology gives dyslexic children the possibility to participate actively to foreign language lesson without perceiving negative affective aspects related to mistaken, which could negatively influence their learning motivation degree.

*1.7.3 Low self-esteem of dyslexic children.*

Dyslexic students' self-esteem can easily decrease, particularly in teen-aged dyslexics, because their reading problems become increasingly pronounced and, accordingly, their necessity of support can change into a humbling experience strictly related to learning process.

In rare cases, low resistance to frustration can culminate in attacks of anger and rage (Ryan, 1992).

Dyslexics do not constitute a homogenous group as regard their emotional functioning, so that some children with dyslexia do not manifest any evident symptoms of emotional disorders (Krasowicz-Kupis, 2008). On the contrary, in some dyslexic children emotional disorders appears significantly.

Dyslexics are often depressed individuals; progressively children begin to have a negative image of themselves, so that they have great difficulty to

[19] During pleasant challenges, human brain releases essential neurotransmitters to the storage and retrieval of incoming information (P. Balboni, 2003), so that playful teaching methodology can effectively aid dyslexic children, favouring working memory processing of incoming language information.

concept a life without continuous failures and unsuccessful experiences in the working context as well as they experience in the education context.

Recent studies on dyslexia causes (Bogdanowicz, 1989, 1999, 2002a; Czajkowska & Herda, 1998; Krasowicz-Kupis, 2008; Zakrzeska, 1999) have confirmed that the emotional-motivational and social problems that can be experienced by dyslexic students are *secondary* to their scholastic failures in acquiring literacy skills. Psychological problems, in fact, are evident exclusively when reading disabilities become increasingly pronounced, so that dyslexic children perceive a great sense of frustration and inadequacy.

In conclusion, emotional and motivational disorders can coexist with dyslexia, but as a consequence rather than a cause of reading disabilities.

It is crucial that educators possess an appropriate understanding of all the aspects of dyslexia, most of all in a mainstream education context, because negative attitudes of peers and lack of specific support can significantly enhance negative feelings which generally characterise dyslexic pupils.

Literacy skills acquisition can frequently be worsened by feeling unable to reach the expectations of parents, teachers and peers (Ryan, 1992).

Accordingly, emotional and motivational consequences of dyslexia can be markedly minimise by wider awareness of teachers of how they can minimise pupils' psychological problems during learning process and provide students with positive education context.