Dyslexia in Greek as an L1 and in English as an L2: A Case Study

by

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List of Abbreviations

L1: Mother Tongue
L2: Second Language
LD: Learning Disability
FL: Foreign Language
FLL: Foreign Language Learning
FLLD: Foreign Language Learning Disability
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Abstract

Dyslexia is a language learning difficulty that affects 25% of the population globally. More specifically, dyslexia influences the development of literacy and language related skills and it is related to difficulties in the processing of information. It is caused by a deficit in the phonological component of language, which leads to problems in keeping the strings of sounds and letters in short-term memory, in segmenting words into phonemes, in reading and writing, in memorizing information, in word recognition and visual perception. As a result, the deficit in the phonological component of language leads to problems in vocabulary, grammar, reading, writing and spelling.

This study is concerned with dyslexia and how it affects literacy development and in particular reading, writing and narrative skills in both Greek and English. It is a case study that examines the dyslexic child’s performance and mistakes in reading, writing and story retelling in Greek, which is his mother tongue and in English, which is his L2. The aim of this study is to compare the child’s performance in the two languages in reading, writing and story retelling and examine the kind of mistakes he makes in each language. Consequently, the child was asked to read, write and narrate in the two languages. The results did not agree with the clinical portrayal of the child as dyslexic, with him being stronger and more fluent in English than in Greek. This project concludes with the discussion of the results and the concluding remarks aiming to give an other perspective to dyslexia by offering different explanations to the child’s unusual better performance in his L2 than in his mother tongue.
Introduction

During the last decades, language learning difficulties such as dyslexia, dyscalculia, dysarthria have been the centre of attention and research. Dyslexia as a language disorder that affects the learning of written and oral language, has been discussed in detail for more than a century. In a technologically advanced society, which evolved into a society of information and knowledge, the use of the written language, the ability to read and write are very important for the survival of the person. As a result, the person who lacks these important abilities or is deprived of them up to a point, faces difficulties in his/her interpersonal relationships as well as in his/her personal choices concerning the professional and educational field.

Having been an English Language teacher in the private sector and having taught children with learning disabilities, I have always wondered what is going wrong with children who seem to face difficulties in learning a foreign language. Throughout the years I have met many children with different learning difficulties and totally different degrees of difficulties, with dyslexia being the most “common”. At first, I wanted to discover how the brain of these children works and what is responsible for their learning difficulties. After that, I was very interested in searching the different types of dyslexia that exist and account for the different difficulties that children may encounter. I also desired to find out what happens in the dyslexic’s mother tongue as well as in his/her L2 because students with dyslexia tend to face difficulties not only in their mother tongue but also in foreign language learning (FLL), with the problem being associated with native language learning difficulties. This is why I decided to work on dyslexia.

In other words, the aim of the present study is to examine the reading, writing and narrative skills of a dyslexic child. More specifically, the paper is a more qualitative study of the kind of mistakes a dyslexic child makes during reading, writing and narration and it
compares the child’s performance and the mistakes he makes in Greek, which is the child’s mother tongue with his performance in English, which is his first L2. However, a quantitative analysis of the mistakes the child makes in the two languages will be given. In order to be able to draw some conclusions, specific tasks were assigned to the child. More specifically, the child had to read a known and an unknown text in both English and Greek, he had to write in English and in Greek and to retell a simple and a complex story in both languages.

The research questions which concern the present study are the following:

1. What kind of mistakes does a dyslexic child make in writing and reading in Greek and what in English?
2. What kind of mistakes does a dyslexic child make in narratives in Greek and what in English?
3. Is the child’s performance in Greek (mother tongue) better than in English (L2)?
4. Does the transparency of the orthography affect the child’s performance in reading in the two languages?

Consequently, the research hypotheses which emerge based on our theoretical background of dyslexia and which we expect to find in this study are the following:

1. The dyslexic child is expected to do many errors in writing, such as spelling errors and to make many reading mistakes due to his deficiencies in phonological processing and his memory deficits.
2. In narratives, the dyslexic child is expected to have difficulties in narrating a story, such as syntactic and semantic errors and problems in comprehending and answering questions due to his problems in language manipulation and working memory deficits.
(3) The dyslexic child’s reading performance in his mother tongue (Greek) is expected to be better than in his L2 (English) due to the transparency of the orthographic system.

(4) According to the Linguistic Coding Differences Hypothesis, the child’s performance and weaknesses in his mother tongue affect his performance in his FL and vice versa. Consequently, the dyslexic child is expected to have similar difficulties in both languages.

The paper is divided into four main chapters. The first chapter is concerned with the theoretical background of dyslexia. More particularly, several definitions of dyslexia are given as well as the causes, the characteristics and the types of dyslexia. In addition, the link between dyslexia and foreign language learning (FLL) will be examined as well as the reading and writing mechanisms of dyslexic learners as opposed to normal learners. The second chapter describes the methodology used during the experiment and more specifically, the aim, the research questions, the profile of the dyslexic child and the tasks used. The third chapter offers a detailed analysis of the results based on the child’s performance in reading, writing and story retelling in both English and Greek. Finally, the fourth chapter discusses the results by giving a more thoughtful dimension to the child’s performance and by trying to account for the research outcomes using different explanations.
CHAPTER ONE
THEORETICAL BACKGROUND

1. Language Learning Difficulties

1.1 On Language Learning Difficulties

Language Learning Difficulties have been the centre of attention for many years. More and more researchers, neurolinguists, psychologists, educationalists and teachers have tried to define Language Learning Difficulties and determine their characteristics, with dyslexia being the Language Learning Difficulty most examined throughout the years. As Pumfrey and Reason (1998, p. 31) claim, the existence of a syndrome or of a Language Learning Difficulty requires one or more of the following characteristics: (a) aetiology, (b) presenting characteristics, (c) identification of the characteristics, (d) prognoses and (e) effective interventions. Consequently, due to the existing disagreement on the causes, definitions and interventions, researchers have proposed different definitions, each of them trying to give a more scientific approach to Language Learning Difficulties.

More specifically, before the terms “specific language learning difficulties”, “learning difficulties” and “learning disabilities” come into existence, the researchers used to adopt the medical or individual model according to which the causes of these difficulties are functional, physical or psychological and arise due to the person’s deficiency and disability (Oliver, 1996, p. 31). This was a more theoretical approach, which located the problem of disability within the individual. Medicalisation is a significant characteristic of this model as it tries to examine the person’s specific deficiency and to find ways for individual treatment (Koutantos, 2000, p. 68; Oliver, 1996, p. 32). As a result, researchers proposed terms like “alexia”, “word blindness”, “strephosymbolia”, “developmental motor aphasia” to refer to these difficulties and to dyslexia as well (Polichroni, Hantzichristou & Bibou, 2006, p. 29).
Another model of disability, whose origins were traced in the 1960s, is the social model of disability. According to this model, the primary causes of the disability are located within society due to its failure to provide the necessary services and to ensure the needs of disabled people. In this case, disability is defined as all the things that impose restrictions on the disabled people such as the existing prejudice, the institutional discriminations, the unusable transportation or the exclusion from work arrangements (Oliver, 1996, p. 31).

A lot of criticism has taken place concerning the two models of disability. The medical model of disability focuses on the individual's deficiencies and finds out ways to reduce those impairments by adapting them to society. However, advocates of disability rights tend to adopt the social model as they think that the medical model of disability leads to the social degradation of the disabled people. More specifically, they think that the “problem” is not within the person and that there is need to find ways not for individual treatment but for societal reorganization.

1.2 Defining Language Learning Difficulties

During the 1960s, when the development of the language difficulties field increased and the researchers became more interested in investigating the reasons why some children have difficulties in language learning, three definitions became popular. Kirk (1962) introduced the term “learning disabilities”, which was accepted by the Association for Children with Learning Disabilities at their organizational meeting. According to Kirk (1962):

A learning disability refers to a retardation, disorder, or delayed development in one or more of the processes of speech, language, reading, writing, arithmetic, or other school subjects resulting from a psychological
handicap caused by a possible cerebral dysfunction and/or emotional behavioral disturbances. It is not the result of mental retardation, sensory deprivation, or cultural and instructional factors. (p. 263)

The importance of this definition is that it uses the educational term “learning disabilities”, making clear in this way that the patients are not brain-injured or perceptually impaired as it was first believed. What is more, Kirk (1962) stressed the academic nature of the learning disabilities and he referred to a neurological or emotional cause while at the same time he pointed out the at-least normal intelligence of the people with these difficulties.

On the other hand, Bateman (1965) introduced the term “significant discrepancy” to define “learning disabilities”. According to Bateman (1965):

Children who have learning disorders are those who manifest an educationally significant discrepancy between their estimated intellectual potential and actual level of performance related to basic disorders in the learning process, which may or may not be accompanied by demonstrable central nervous dysfunction, and which are not secondary to generalized mental retardation, educational or cultural deprivation, severe emotional disturbance, or sensory loss. (p. 220)

This gap between the intellectual potential and the actual level of performance is known as the aptitude-achievement discrepancy, which is the most important part of her definition. However, no reference was made to the specific types of learning difficulties.

Another definition on specific learning disabilities proposed by the National Advisory Committee on Handicapped Children (1968) is the following:
Children with special (specific) learning disabilities exhibit a disorder in one or more of the basic psychological processes involved in understanding or in using spoken and written language. These may be manifested in disorders of listening, thinking, talking, reading, writing, spelling or arithmetic. They include conditions which have been referred to as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, developmental aphasia, etc. They do not include learning problems that are due primarily to visual, hearing, or motor handicaps, to mental retardation, emotional disturbance, or to environmental disadvantage. (p. 34)

As a result, in the 1960s, these three definitions of Kirk (1962), Bateman (1965) and the National Advisory Committee on Handicapped Children (1968) reflected the academic nature of the learning problem and the influence of the psychological processing problems.

During the 1970s, significant changes were made to special education due to the need for establishing the civil rights of all children. This led to legislations which required professionals to develop unbiased assessment instruments for identifying children with exceptionalities (O’Shea, O’Shea & Algozine, 1998). The definition of the US. Office of Education (1976) became more popular:

A specific learning disability may be found if a child has a severe discrepancy between achievement and intellectual ability in one or more of several areas: oral expression, written expression, listening comprehension or reading comprehension, basic reading skills, mathematics calculation, mathematics reasoning, or spelling. A “severe discrepancy” is defined to exist when achievement in one or more of the areas falls at or below 50% of
the child’s expected achievement level, when age and previous educational experiences are taken into consideration. (USOE, 1976, p. 52405)

This definition considers the specific learning disabilities as problems in oral and written expression as well as in comprehension which lead to problems in listening, reading, writing, spelling and speaking. The most important part of this definition is that it emphasizes that people with learning disabilities have no visual or hearing problems and they do not suffer from mental retardation.

On the other hand, during the 80s and 90s, students with learning difficulties were characterized as inactive and passive learners (Torgesen, 1977), who lack cognitive and metacognitive strategies (Wong & Wong, 1986) and who have difficulty in generalizing knowledge across settings. Referring to the Specific Learning Difficulties, Tansley and Panckhurst (1981) proposed the following definition:

Children with specific learning difficulties are those who in the absence of sensory defect or overt organic damage, have an intractable learning problem in one or more of reading, writing, spelling and mathematics, and who do not respond to normal teaching. For these children, early identification, sensitive encouragement and specific remedial arrangements are necessary. (p. 259)

In 1991, the National Joint Committee on Learning Disabilities defined Learning Disabilities as follows:
Learning disabilities is a general term that refers to a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning, or mathematical abilities. These disorders are intrinsic to the individual, presumed to be due to central nervous system dysfunction, and may occur across the life span. Problems in self-regulatory behaviors, social perception, and social interaction may exist with learning disabilities but do not by themselves constitute a learning disability. Although learning disabilities may occur concomitantly with other handicapping conditions (for example, sensory impairment, mental retardation, serious emotional disturbance) or with extrinsic influences (such as cultural differences, insufficient or inappropriate instruction), they are not the result of those conditions or influences. (p. 16)

In this definition of Learning Disabilities, the case of inadequate education, hearing or visual impairment, neurological disorders and emotional difficulties as possible causes of these difficulties are excluded.

1.3 Defining Dyslexia

Language Learning Difficulties is an umbrella term, which refers to a variety of learning difficulties such as dyscalculia, dyspraxia, ADHD, dysarthria, dysgraphia, with dyslexia being one of them. It is a general category, which includes children who have difficulties and show insufficient abilities to the school demands (Polichroni et al., 2006). According to Pumfrey and Reason (1998, p. 6), the terms “dyslexia” and “specific learning disabilities” are used by many researchers in order to refer to the same condition.
As far as dyslexia is concerned, which is the main focus of this study, it is considered to be a specific, genetic language learning difficulty which affects the development of literacy and language related skills. It is related to difficulties in the processing of information which result in restrictions in literacy development (Davis & Braun, 2001). The term “dyslexia” has Greek origin and comes from the prefix –\textit{dys} ‘impaired’ and the word \textit{lexia} ‘word’ meaning difficulty with words or language, speech.

At first, in 1877, a German physician named Kussmaul (as cited in Critchley, 1970) called the inability to read and write “word blindness”. Berlin (1887) was the one who generated the term “dyslexia” to describe the word-blindness and the reading difficulties of children. Moreover, he pointed out that the dyslexic child can see the words but some of them, together with some letters are considered to be perceptually unstable. Consequently, he clarified that dyslexia is not the result of mental retardation or of visual or hearing problems as it was believed. Since then, several definitions have been proposed throughout the years.

In 1968, the Research Group on Developmental Dyslexia of the World Federation of Neurology (p. 22), described dyslexia as “a disorder in children who, despite conventional classroom experience, fail to attain the language skills of reading, writing and spelling commensurate with their intellectual abilities”. However, this definition presupposes a discrepancy in skills due to cognitive disabilities, which are usually of constitutional origin. As a result, in 1968, the World Federation of Neurology developed a second definition of dyslexia in order to complement the previous definition. According to this definition, dyslexia is “a disorder manifested by difficulty in learning to read despite conventional instruction, adequate intelligence, and socio-cultural opportunity. It depends on fundamental cognitive disabilities which are frequently of constitutional origin” (as cited in Karapetsas, 1997, p. 14).
In 1989, the British Dyslexia Association (as cited in Pumfrey & Reason, 1998, p14) defined dyslexia as:

A specific difficulty in learning, constitutional in origin, in one or more of reading, spelling and written language which may be accompanied by difficulty in number work. It is particularly related to mastering and using written language (alphabetic, numerical and musical notation) although often affecting oral language to some degree.

According to Karapetsas (1997), dyslexia refers to the difficulties that people encounter and affects the mechanisms responsible for writing and reading. In 1997, the British Dyslexia Association adopted the idea of the World Federation of Neurology concerning the constitutional origin of dyslexia and it proposed the following definition for dyslexia:

Dyslexia is a complex neurological condition which is constitutional in origin. The symptoms may affect many areas of learning and function, and may be described as a specific difficulty in reading, spelling, and written language. One or more of these areas may be affected. Numeracy, notational skills (music), motor function and organizational skills may also be involved. However, it is particularly related to mastering written language, although oral language may be affected to some degree. (as cited in Reid, 1998, p. 2)
In 1999, Stasinos referred to dyslexia as a serious disorder which concerns written language learning, its use and comprehension while at the same time he pointed out that it is not linked to the cultural, social, emotional and intellectual abilities of people. In addition, Reason, Frederickson, Heffernan, Martin and Woods (1999) stressed out that dyslexia is evident when word reading or spelling develops incompletely or with difficulty.

One of the most recent definitions of dyslexia comes from the International Dyslexia Association, which in 2002 referred to this learning difficulty as follows:

Dyslexia is a specific learning disability that is neurobiological in origin. It is characterized by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities. These difficulties typically result from a deficit in the phonological component of language that is often unexpected in relation to other cognitive abilities and the provision of effective classroom instruction. Secondary consequences may include problems in reading comprehension and reduced reading experience that can impede growth of vocabulary and background knowledge.

(International Dyslexia Association, 2002)

At this point, it is essential to underline that dyslexia refers only to one category of the specific learning disabilities and it is associated with the difficulty in learning to read, in writing and spelling correctly. It differs from person to person while early intervention is necessary in order for the person to ameliorate his/her problem. No one can get over dyslexia completely and this inability is not the result of lack of motivation, sensory dysfunctions or insufficient educational and environmental opportunities although it can co-exist with all of
them. However, many researchers use the terms “dyslexia” and “language learning difficulties” in the same conditions and under the same circumstances.

1.4 Characteristics of Dyslexia

Dyslexia is considered to be a specific language learning difficulty which affects the development of literacy and language related skills and it is related to difficulties in the processing of information, which consequently affect literacy development (Davis & Braun, 2001). Researchers have revealed a discrepancy in children’s performance on achievement tests such as oral or written language and their intelligence test scores. These results led to the conclusion that there is no link between dyslexia and the person’s intelligence. According to Peer (1994), dyslexia is a combination of abilities and weaknesses which affect different aspects of language such as reading, speaking, writing, listening, grammar and vocabulary. These weaknesses can be found in the areas of speed of processing, rapid naming, short-term memory, visual and auditory perception, phonological processing and language.

1.4.1 Cognitive Level

First of all, learners with dyslexia face specific difficulties. They encounter difficulties not only in literacy but also in the cognitive and psycho-social level. As far as the cognitive level is concerned, dyslexic learners have difficulties in the visual and acoustic perception and discrimination of sounds, which leads to problems in phonological processing and to poor phonological awareness. All these difficulties result from a deficit in the phonological component of language that causes problems in keeping the strings of sounds or letters in short-term memory, in segmenting words into phonemes and in reading or writing non-words (Davis & Braun, 2001). As a result, learners with dyslexia have problems in reading, spelling, word and letter recognition, in distinguishing between the graphemes and
the phonemes of the words and in listening correctly to words, which lead them to write or stress the words wrongly (Polichroni et al., 2006, p.36). Their pace of processing is very slow, their coding and decoding abilities are problematic, they confuse the sequence of the sounds they hear and they have difficulty in remembering the sequence of the sounds or of the words that are acoustically similar. Consequently, they are unable to master the phonological structure of the language and they confuse the phonemes, creating in this way new words. They do not pay attention to the prefixes and suffixes of the words, they cannot perceive the phonemes and the syllables of the words while they usually omit function words while reading (Alevridou, 2010).

Furthermore, learners with dyslexia encounter difficulties in visual processing as well, as they cannot perceive the basic characteristics of the written language such as the orientation of the letters, their position in the word and the order in which they appear in a word. They have difficulty in perceiving, recognizing and discriminating between letters, symbols or shapes, they usually see the words dully and they skip pages, they are hypersensitive in color contrasts and they usually suffer from headaches after a great effort to read or write (Polichroni et al., 2006). They are also incapable of keeping in memory images of letters, shapes, words, numbers that have some similarities and as a result, they have difficulties in reading and writing letters, numbers, words and shapes that are similar.

Memory plays also a very important role not only in language learning but also in language processing. As Swanson and Cooney (1991, p. 104) claim, memory is the “ability to encode, process, and retrieve information that one has been exposed to”. Learners with dyslexia experience deficits in areas of memory storage, sequencing and retrieval, leading to difficulties in remembering information long enough to repeat, in manipulating or storing it, in retaining or integrating the new material in order to be able to build on previous knowledge and in retrieving the sequence of multi-step operations. According to Polichroni et al. (2006,
p. 37), dyslexic learners cannot read and comprehend what they read at the same time while they usually cannot recognize the letters as they cannot retain them in memory.

Moreover, learners with dyslexia encounter difficulties in motor skills such as handwriting or swimming, in coordination and organization (Riddick, Wolfe & Lumsdon, 2002). These children lack automaticity and consequently, they have difficulty in fulfilling activities that presuppose the retention of linguistic and numeric sequences. As Riddick et al. (2002) state, dyslexic learners have difficulty in transferring some types of information, such as the sequencing of the months, the days of the week or even a name, from their short-term to their long-term memory. Consequently, they encounter problems in putting things in the right order, problems with verbal instruction, they have trouble putting names to things and they are usually left-handed. Dyslexic learners have difficulties in perceiving a text and memorizing information as well as problems in orientation and confusion between the left and the right, which usually lead them to directional confusion and problems with time management (Markou, 1996).

People with dyslexia have also difficulties in concentration and number manipulation as well as in finding the right word in order to express their thoughts. According to Wong and Wong (1986), these children lack metacognitive abilities which help them know what techniques are necessary in order to accomplish tasks, employ self-regulatory strategies to monitor task completion and achieve successful academic performance. They lack effective strategies such as rehearsal and organization, which are mandatory so as to assist in memorizing information and facilitate recalling (Swanson, 1983).
1.4.2 Literacy

As far as literacy is concerned, learners with dyslexia demonstrate academic disabilities in reading, oral and written language, mathematics, comprehension skills and in acquiring phonological skills that are necessary for word recognition and comprehension. Some of the most characteristic difficulties they encounter during oral reading are the slow pace of reading, the addition or omission of words, letters, syllables, phonemes, chunks or entire lines of the text, the lack of expression while reading, the confusion of letter and syllable sequencing in words, the misreading of words because of the inability to recognize the letters, the inversion/reversal of letters and the inability to comprehend the text (Polichroni et al., 2006, pp. 42-45).

Moreover, dyslexic learners confuse the letters of a word, they may read the same passage twice, they read words backwards, they misread the phonemes and the words that are visually or acoustically similar, they have difficulty in reading polysyllabic or unusual words, they skip lines while reading, they follow the text with their fingers in order not to skip any lines and they have difficulty in discriminating between words that have the same initial or final letters. They also read hesitantly and only in the present tense even if the text is in the past tense, they cannot synthesize the single sounds into the correct word, they confuse short vowels, they misread initial consonants, they omit, misread or reread small words and especially function words, they ignore punctuation, they do no change their intonation and they usually stress wrong syllables.

In addition, dyslexics mispronounce even words that are within their vocabulary, they make guesses while reading, they substitute words, they omit affixes and they usually get lost (Hornsby, 1988). In oral language, they usually have problems in syntax, semantics, morphology, phonology, pragmatics, articulation and they do not understand instructions. They are poor or late talkers, late walkers and their speech is immature. They cannot
comprehend and answer questions, they have difficulty in drawing conclusions and in distinguishing between the important and the less important parts of a text (Polichroni, 2011).

As far as writing and spelling are concerned, children with dyslexia usually make a lot of spelling mistakes as they cannot retain in memory the spelling rules. They usually do not apply or generalize the spelling rules which they already know while their handwriting is illegible. They skip, reverse or add letters or syllables to some words, they make mistakes in the order of the letters in a word, they might repeat the same letter, they mirror write words or letters, they spell the words as they sound, their spelling is bizarre, they do not leave space between different words and they write using both capital and lowercase letters at the same time (Stasinos, 1999, p. 201).

Furthermore, their written language is characterized by problems in composition, as they cannot write the appropriate letter when given the sound, they cannot pick out letters from a display when the name is called out and they cannot match up the same letters when asked to (O’Shea, O’Shea & Algozzine, 1998). The content of their written assignments is characterized by limited vocabulary and telegraphic format while their pace of writing is slow and their handwriting is full of smudges. They do not usually use stress and punctuation, they have difficulty in syntax and grammar while they may stress the words wrongly and not indicate the tense of the verb. Learners with dyslexia avoid writing, which they find demanding and their notebooks are usually messy.

In some cases, they have also difficulties in maths as they might write the numbers upside-down, or they might be unable to do calculations without writing them down. They do not understand mathematical problems and they usually place wrongly the numbers in a vertical operation. What is more, they encounter difficulties in measurement conversion and perception and they cannot remember the basic mathematical rules (Polichroni et al., 2006).
1.4.3 Psycho-social Level

As far as the psycho-social level is concerned, researchers have revealed a significant causal relation between learning disabilities and psychosocial problems. Learners with dyslexia usually have to confront the daily anxiety of the school environment, the possible failure and the rejection of their peers. As a result, they usually have low self-esteem and they exhibit hyperactivity, emotional instability, behavioral problems, impulsiveness or even difficulties in their personal relationships (Mati-Zisi, 2004, p. 167). They feel disappointed, they are not concentrated, they are nervous, they are exhausted after reading or writing, they show apathy for their school performance and they are lazy and emotionally disturbed (Polichroni, 2011). In addition, they lack motivation and self-control, they have poor concentration, they are unorganized and they usually suffer from attention deficit hyperactivity disorder. According to Polichroni et al. (2006), learners with dyslexia also exhibit social skills deficits as they have difficulty in making and maintaining their friends and they are usually not accepted by their peers. Consequently, they need not only their teachers but also their parents in order to help them with their problems.

1.4.4 Strengths of Learners with Dyslexia

However, learners with dyslexia do not have only difficulties but also strengths. First of all, they are more curious than the ordinary people about the world, they are more creative and they think mainly with pictures and not with words (Davis & Braun, 2001). They are insightful and intuitive and they perceive things with their senses, which are more developed (Davis & Braun, 2001). Learners with dyslexia are good at problem solving, they have analytic thinking, they are good at generating ideas, they are seeing the “big” picture and they form 3-D constructions (Riddick et al., 2002). They are great communicators and many of them are employed as artists, designers, chefs, engineers, architects (Davis & Braun, 2001). If
they are not oppressed, all these abilities lead to high-level ingenuity and to the development of creative talents.

1.5 The Causes of Dyslexia

Dyslexia is a language learning difficulty that can emerge as a consequence of prenatal abnormalities or postnatal factors and it is also related to the human’s mental ability and emotional development. Dyslexia is a universal situation which affects 25% of the world’s population (Kormos & Smith, 2012). More specifically, 14% of the British population (Fotinou, 2011), 10% of the population in U.S.A. (Porpodas, 1997) and 10% of the Swedish population (Fotinou, 2011) suffer from dyslexia. In Greece, the official rate is 2.2% but it represents only the population which has been diagnosed as dyslexic at medical, educational state institutes such as K.Δ.Α.Υ. In other words, the actual rate in Greece is expected to be higher since not all the dyslexic students have been examined.

Throughout the years, several theories, which try to examine the causes of dyslexia, have been developed. These theories have been integrated into two different categories of theoretical approaches, namely the neurobiological approach, which has a medical orientation and the cognitive, which has a psychological-educational orientation.

1.5.1 Neurobiological Approaches

1.5.1.1 Genetic Mechanisms

According to Nijakowska (2010), the Genetic Theory is the oldest attempt to explain the causes of dyslexia as it presupposes the link between the occurrence of the disorder and the inherited functional and anatomical features of the nervous system that determine the existence of the reading and spelling difficulties. As researchers (Pennington, 1989; Porpodas, 1992) point out, it has been shown that there is a causal relationship between
dyslexia and heredity. Research on families and twins has shown that children with dyslexia had a relative with reading difficulties and that in twin sisters or brothers, the appearance of dyslexia in both children was a common phenomenon (DeFries et al., 1987; Jaklewicz, 1982; Pennington & Smith, 1988; Ramus, 2006; Stein, 2001).

In their research, Snowling, Muter and Carrol (2007) revealed that there is an increased risk of dyslexia among adolescents whose parents are dyslexic. These children were examined when they were 3 years and 9 months and then at the age of 6 and 8. The results showed that their literacy difficulties were long-lasting with no apparent development. More specifically, phonological and orthographic awareness deficits, which are features of dyslexia may be inherited (Snowling, 2001). In their study, Lundberg and Hoein (2001) revealed that children that are genetically disposed to dyslexia demonstrate a delay or a deficit in their phonological development, which influences their word recognition and phonological decoding skills. The orthographic ability is also a hereditary characteristic (Stein, 2001). However, according to Ramus (2006), a combination and an interaction of multiple genes and not a single one is responsible for dyslexia. Researchers (Fisher & Francks, 2006; Fisher & Smith, 2001) have found that the regions on chromosomes 1, 2, 3, 6, 15 and 18 reveal the predisposition for dyslexia.

Consequently, the awareness of the family history in the acquisition of literacy skills can be an indicator which can lead to the necessity for early assessment and appropriate intervention in order to reduce or even prevent scholastic failure. As a result, all these studies enhanced the opinion that genetic factors can affect the appearance of reading difficulties.
1.5.1.2 Neurological Factors

During the last decades large parts of the global population are exposed to reading and writing skills, a fact that leads to the conclusion that these skills are not inherent but a social need which led to their emergence. Combining this fact with dyslexia, Fotinou (2011) states that a dyslexic does not carry a specific genetic impairment which causes this situation. Reading and writing are complex skills that demand the activation of cognitive, visual, perceptual and functional mechanisms so as to process and comprehend the printed text.

As far as the Neuro-Biological Theory is concerned, the initial interest of the doctors to account for the causes of dyslexia by giving medical explanations to the disability led to the prevalence of this theory. More specifically, according to this theory, dyslexia has a neurological origin and it is the result of minimal brain damage or brain dysfunction, which is presented either as insufficient cerebral dominance or as delay in brain development. Individuals with dyslexia show different brain anatomy, brain activity and function as opposed to non-dyslexic individuals. There are two basic neurological theories that attempt to explain the causes of dyslexia (Porpodas, 1992). The first stresses that cerebral lateral asymmetries may cause problems in reading ability. Cerebral malfunctions such as changes in cerebral cortex have been noted with ectopias, which are normally within the first layer of the cortical areas that are responsible for language, being displaced to the surface of the brain (Galaburda, Sherman, Rosen, Aboitiz & Geschwins, 1985). This means that dyslexia is not caused by developmental delays, speech or hearing impairments or poor intelligence.

The second theory advocates that a general brain dysfunction, which leads to reading and writing impairments, is responsible for dyslexia. More specifically, as Porpodas (1992) describes, the insufficient cerebral dominance can lead to dyslexia. The term “cerebral dominance” refers to the dominance of one of the two hemispheres as far as different functions are concerned (Stasinos, 2003, p. 88). Orton (1937) has found out that the left
hemisphere is the dominant hemisphere for the right-handed people as it controls language and speech and it receives the visual stimuli and the information in the form of words, which then depicts correctly. As a result, possible damage in the person’s left hemisphere which controls language and the ability to speak and write or a deficit in cerebral dominance are the basic causal factors that lead to confusion, with the dyslexic child having difficulty in writing and reading the word correctly (Alevridou, 2010; Stasinos, 2003). As a consequence, the child reverses the letters and this is the reason why Orton (1925) used the term “strephosymbolia” to refer to the children’s difficulties in reading.

According to Hornsby (1988), the right hemisphere of learners with dyslexia is usually greater than the left. This deficient dominance of the left hemisphere in dyslexic learners is due to (a) injuries in the left hemisphere which produces loss of speech, (b) the fact that in right handed people the left hemisphere is dominant and responsible for language processing and the deficient hemisphere dominance is the cause for right-left confusion (Fotinou, 2011, p. 10). One of the symptoms of dyslexia is disorientation, which is obvious in the orthographic errors. According to Porpodas (1992), most dyslexics are left-handed, a fact that equals to the deficient dominance of the left hemisphere a significant cause of dyslexia that is related to the hemisphere dominance. Cerebellar Dysfunction Theory is another theory of dyslexia, which claims that the dyslexic’s cerebellum is dysfunctional and that the cognitive difficulties are due to the subsequent poor automatized processing which affects the automatisation of tasks (Talli, 2010).

What is more, Lundberg (1999) points out that apart from the difference in brain structure, dyslexic learners have a different brain function when they face literacy tasks, as opposed to normal learners. In their research, which included functional brain imaging studies of dyslexics, Price and McCrory (2005) tried to locate the neural bases of developmental dyslexia. The results revealed reduced left posterior inferior activation, which
is correlated to reading skills, in dyslexics during reading aloud and silently. Moreover, reduced occipitotemporal and left temporo-parietal activation was observed during semantic decisions.

Furthermore, according to one other neuro-biological theory, the causes of dyslexia are associated with the pace of development and maturation of the brain. The supporters of this theory consider that people with reading difficulties show a deceleration in the pace of neurological development in some parts of the brain, something that leads to basic deficits in abilities relevant to reading (Karapetsas, 1997; Stasinos, 1999). According to Morgan and Pringle (1896) and Hinshelwood (1895), the reading difficulties that many children encounter, are the result of the insufficient development of the left angular gyrus (L.A.G.), which is responsible for the storage of visual stimuli into memory. As a result, the terms “word blindness” and “congenital word blindness” were used to describe and refer to these difficulties (Karapetsas, 1997, 18; Stasinos, 2003, p. 84-86).

1.5.2 Cognitive Approaches

1.5.2.1 Visual and Auditory Deficiencies

According to the Magnocellular Deficit Hypothesis, dyslexia is caused due to an impairment in the visual system, which includes the magnocellular and the parvocellular divisions, each responsible for processing different aspects of the visual information. According to White et al. (2006), the magnocellular dysfunction produces deficits while processing visual stimuli at low luminance, low spatial frequency and high temporal frequency while the parvocellular dysfunction produces deficits while processing at high luminance, high spatial frequency and low temporal frequency. However, during the last decades, several cognitive theories, which claim that dyslexia is associated with the
perceptual abilities of the person during the first stages of learning to read, have been developed.

Deficits in visual perception are the basic causal factors of dyslexia which lead to the theory of the Perceptual Deficit (Pennington, 1990, p. 199). According to this theory, the notions of sequence, direction and orientation are affected by an impairment in the sensory system leading to a visual deficit (Alevridou, 2010). In other words, dyslexia is the result of a deficit in visual organization of space and visual memory. Many dyslexic learners show orientational and sequential problems during reading, which leads them to confuse letters, similar in their visual form such as d/b, δ/þ. According to Orton (1937), writing errors such as wrong direction of the symbols and non linear writing can be attributed to impaired sensory and visual systems.

Researchers tried to offer more evidence to show the causal relationship between the function of the Magnocellular System and reading. Visual attention and eye movements are considered to depend on the functioning of the Magnocellular System (Nijakowska, 2010). People with dyslexia show deficits in the systems controlling the movements of the eyes. The movements of the eyes of a regular reader are different to those of a dyslexic reader. According to Stasinos (1999, p. 128-129), a regular reader focuses his/her eyes to the beginning and the middle of a word and not to the centre while at the same time he/she shows a smooth flow of the eyes from left to right with little reflux to the back. On the other hand, a reader with dyslexia shows great instability to the movements of his/her eyes, the reflexes are more and more frequent and the fixation of the eyes to the letters and the words is sometimes wrong and lasts less than those of the normal reader (Porpodas, 1992, p. 88). For this reason, children with dyslexia cannot retain the sequential order of the written symbols of the text and they have difficulty in changing the line during reading, in going from the end of a line to the beginning of the next by reading from left to right. This is why they form words by taking
scattered letters from the text, they confuse the order of the lines and they omit reading whole lines. However, in their research, Ellis and Miles (1978) showed that fixations played no actual role, with dyslexic children performing poorly in tasks requiring reading numbers in intervals smaller than 150 msec.

Another theory that accounts for dyslexia is the Temporal Processing Theory according to which reading and spelling difficulties result from an auditory impairment that produces a deficit in processing rapidly changing auditory stimuli (Tallal, 1980). Researchers have discovered that children with dyslexia show deficits in the auditory perception. This leads them to difficulties in discriminating between words that sound similarly because they cannot perceive the phonemes which constitute them. Consequently, the children confuse words that have a similar auditory form, for example they may listen to the word /γάηα/ and write /γόπα/. The deficits in auditory perception affect dyslexic children’s ability to read, with these children pronouncing correctly a word when they speak but when they have to read it, they pronounce it wrongly (Stasinos, 1999).

1.5.2.2 Memory Deficits and Dyslexia

Another approach links dyslexia to deficits in the person’s memory. According to Baddeley (2006), until the late 1950s, memory was treated as a single unitary faculty. However, by the late 1960s evidence revealed that short-term and long-term memory are separated with Atkinson and Shiffrin (1968) presenting a model according to which information was coming in from the environment and was passing through perceptual stores into short-term memory, which was assumed to act as a working memory, holding information, allowing it to be used in cognitive tasks and transferring it to long-term memory from where it is retrieved.
However, Baddeley and Hitch (1974) modified the working memory model. They thought that working memory consists of a central executive, which includes two ‘slave’ systems, namely the phonological loop and the visuo-spatial sketchpad, which allow people to store information for short periods with either holding speech-sound information or visual and spatial material, respectively. These “slave” systems develop with age (Henry, 2002). The central executive, which is an attentional system, gives them the opportunity to manipulate this information while it is stored. This simple storage of information is the short-term memory while when active processing is needed in addition to the storage of information, this is working memory. The central executive includes skills such as planning, fluency, inhibition, shifting or switching of attention, and remembering important information (Henry, 2002). Baddeley (2000) added also another component to the working memory model known as the “episodic buffer”, which provides a link to long-term memory, a way of integrating information from the other systems as a unified experience and extra storage capacity that does not depend on the perceptual nature of input.

The working memory model is very important as it accounts for the way people manipulate and store information during thinking or reasoning. It refers to the system which stores and manipulates information temporarily supporting at the same time the capacity for complex thought (Baddeley, 2007). It functions as a mental place which is used for everyday cognitive activities that require processing and storage (Alloway, 2006). However, as Gathercole and Alloway (2008) claim, limited amount of information can be held in working memory for short periods as its capacity is restricted, with the average adult not holding more than seven units of information. This holding of information can be extended by rehearsal, which is constant repetition of the information we want to remember. On the other hand, long-term memory retains information for use in the future. It has an unlimited storage capacity and it is relatively slow (Atkinson & Shiffrin, 1968). What is more, working
memory affects the child’s ability to learn and it is a predictor of learning outcomes. Working memory difficulties play a crucial role in children’s underachievement at school (St. Clair-Thompson, 2011). Poor performance on working memory tasks is associated with failure to progress in reading (Swanson, 1983), mathematics (Bull & Scerif, 2001) and language comprehension (Seigneuric, Ehrlich, Oakhill, & Yuill, 2000).

Children with dyslexia have difficulty in recalling in their memory, information already mentioned. According to scientists, these difficulties are due to deficits mainly in the visual, auditory and long-term memory. As far as the visual and the auditory memory are concerned, research has shown that people with dyslexia have deficits in sensory processing and storage. In other words, these people are incapable of retaining what they have seen or listened because of dyslexia and as a result, they cannot process the information they have received and transfer it to long-term memory (Stasinos, 1999). As for long-term memory, researchers mention that learners with dyslexia have lower performance in long-term memory as compared to normal readers. More specifically, children with dyslexia find it difficult to keep in mind the order of words, sounds or facts in order to produce a written text correctly spelled or to recognize it. The auditory and the long-term memory are influenced to a great extent by possible deficits that children have in their phonological awareness. While listening to a word, the children have difficulty in matching the sound to a particular symbol and to encode it, to store it in memory and to recall it when needed.

1.5.2.3 Phonological Abilities

The deficits in phonological processing are considered to be the basic cause of dyslexia (Karapetsas, 1997; Pennington, 1990). Phonological processing refers to the use of speech without reflecting on the structure of spoken words (Nijakowska, 2010). It includes the phonemic segmentation of the words, their articulation, the repetition of words and non-
words as well as the encoding and decoding of visual symbols that dyslexics find difficult (Hulme & Snowling, 2009). Phonological awareness, on the other hand, “is the ability to perform explicit judgments with regard to the structure of spoken words” and it refers to the operations on speech sounds that engage memory, analysis and synthesis of phonological elements (Nijakowska, 2010, p. 44). Learners with dyslexia show weaknesses in converting the visual information into phonological codes resulting into unsuccessful reading (Stasinos, 1999). As a result, orthographic errors can be made because dyslexics have no phonetic encoding for a word in their mental lexicon in order to be converted to the corresponding printed form (phoneme to grapheme conversion).

As Snowling (2000) claims, according to the Phonological Deficit Hypothesis, learners with dyslexia show a deficit in phonological processing, which results in impairments in representing, storing, processing and retrieving phonological information, with studies (Brady & Shankweiler, 1991; Denckla & Rudel, 1976) revealing that they face difficulties in tasks requiring verbal short-term memory, phonological awareness, phonological recoding and rapid automatized naming. Dyslexic learners show deficits in verbal short-term memory abilities, something that makes the memorization and retrieval of word forms difficult. In memorizing the phonological form of a word, one has to remember the sounds that constitute it and the order in which they occur, something which requires appropriate phonological short-term memory functioning and phonological awareness, abilities, which are problematic for dyslexics (Brady & Shankweiler, 1991).

As Vellutino, Fletcher, Snowling and Scanlon (2004) describe, phonological coding is the ability to use speech codes in order to represent words. Research (Blachman, 2000; Fletcher et al., 1994; Wagner, Torgesen & Rashotte, 1994) has shown that deficiencies in phonological skills is the basic cause of dyslexia and that training in phonological awareness and letter-sound mappings has a positive effect on word identification, spelling and reading.
Problems in phonological awareness are associated with impaired reading skills and the fact that accounts for this claim is that poor phonological skills lead directly to poor reading (Beaton, 2004). This means that the difficulty in learning to read is associated with poor phonological awareness and with the failure to acquire skills in alphabetic coding. Consequently, weak phonological coding may lead to difficulties in retrieving printed words and in processing information in working memory (Elbro, 1997; Gathercole & Baddeley, 1990). More specifically, this difficulty in name storage and retrieval can impair the learner’s ability to form connective bonds between the sound and the grapheme, impairing in this way his/her ability to store representations of words and being fluent in word identification (Vellutino et al., 2004).

Even nowadays, many adult dyslexics continue to encounter difficulties in performing successfully on tasks assessing phonological abilities (Leong, 1999). This means that reduced phonological sensitivity is one of the most persistent deficits in adult dyslexics even if their reading has reached reasonable levels of accuracy (Hanley, 1997; Gottardo, Siegel, & Stanovich, 1997). Dyslexics find it difficult to apply grapheme-phoneme or orthographic-phonological conversion rules. As a result, if a child has difficulty in segmenting a word into its constituent parts, it will be difficult for him/her to learn the sounds which are represented by each letter or letter combinations and hence to acquire a phonological reading strategy.

1.5.2.4 Double-Deficit Hypothesis

The double-deficit hypothesis (DDH) states that dyslexic difficulties are the result of two underlying sources, namely the phonological core deficit and naming speed impairment (Wolf & Bowers, 1999). In the previous section, we discussed the case of phonological core deficit. In this section, we will see in more detail the second deficit in dyslexia, namely the naming speed impairment. Rapid Automatized Naming (RAN) measures the deficits in the
rate of processing by examining the serial naming speed (Nijakowska, 2010). As Wolf and O’Brien (2001) point out, individuals’ responses on tasks of naming speed are analyzed with respect to the time that the individual needed in order to provide verbal labels for the high-frequency visual stimuli, such as numbers, letters, colours, objects. Slow naming speed reveals low-level ability to recognize words quickly, which as a result invites reading difficulties (Nijakowska, 2010). This means that the children who have difficulties in rapid processing rates and phonological deficits are expected to experience problems in reading development.

1.5.3 Language-Based Deficits

However, there are also researchers who think that language based deficits can be responsible for dyslexia. Language is a complex system that constitutes of different subsystems such as phonology, morphology, syntax, semantics, grammar and vocabulary. Research (Vellutino, Scanlon & Spearing, 1995) has shown that poor language skills which are the consequence of poor reading skills and limited exposure may lead to reading disability.

1.6 Types of Dyslexia

As mentioned before, dyslexia is a learning disability that is different from person to person. Researchers have tried to categorize the difficulties that children encounter in learning and as a result, they came up with different types of dyslexia. More specifically, dyslexia is divided into two broad categories, the acquired and the specific or developmental dyslexia. The main focus of this paper is the second category. However, a detailed analysis of all the other types of dyslexia will be given.
1.6.1 Acquired Dyslexia

Acquired dyslexia refers to disruption of the reading performance of a person, who was a normal and fluent reader, after brain damage. There are individuals whose language comprehension and production was affected by a brain trauma or an illness. In these cases, language development in reading, writing and orthographical skills had been fully acquired but they were impaired after a brain injury. Depending on the degree of damage, different aspects of reading, writing and orthographical performance are affected in each case. This is the reason why there is a classification based on the symptoms of each type of acquired dyslexia. According to Shallice and Warrington (1980), acquired dyslexia can be classified into two general types, namely peripheral and central dyslexias, depending on the primarily affected mechanism.

1.6.1.1 Peripheral Dyslexias

In this type of dyslexia the visual analysis is impaired. Consequently, this impairment leads to misconception of the letters and to different kinds of disorders in reading, writing and orthography which have the same primary cause (Fotinou, 2011). However, a further subclassification of Peripheral Dyslexias is needed.

1.6.1.1.1. Neglect Dyslexia

People with this type of dyslexia tend to misinterpret the first one or two letters of a word by replacing them with others and not by deleting them. For example, the word “try” could be read as “fry” by replacing “t” with an “f” and not as “ry” (Fotinou, 2011). This means that learners with neglect dyslexia are aware of the existence of a letter in the beginning of a word but they cannot decode the sign correctly because of the impairment in their visual analysis mechanism. As Ellis, Flude and Young (1980) proved, in neglect
dyslexia there is a dissociation between reading performance and word recognition. More specifically, patients were able to recognize words when they were spelled aloud to them but they were unable to read them correctly, leading to the conclusion that people with neglect dyslexia are characterized by impairment in the visual analysis of the words.

1.6.1.1.2. Attentional Dyslexia

This subtype of dyslexia affects the reading of long words or the reading of words in sentences. As a result, the patient can recognize single letters and words but when he/she has to deal with a significant number of letters, he/she loses his attention control. According to Fotinou (2011), this can lead to a “mixed” word, composed by the constituents of neighbouring words (e.g. “show” and “glamour” could give “glow”) since the dyslexic intermixes visually close letters.

1.6.1.1.3 Letter-by-letter (LBL) Dyslexia

In this type of dyslexia, dyslexics identify and read the letters of a word one by one as they cannot process all the letters in parallel because of an impairment in letter encoding when letters are processed in parallel. As a result, patients with LBL dyslexia process the letters one by one and they name each letter separately in order to read the word. These learners have lost access in the orthographic lexicon and therefore they cannot process whole words (Ellis & Young, 1996). In other words, they lack orthographic representations of written words and they have to process even familiar words as if they were seen for the first time.
1.6.1.2 Central Dyslexias

According to this type of dyslexia the cause of the difficulties in language comprehension and production is not restricted to the visual module but it goes further to other parts of the brain. Different versions of this type exist, which raise the need to subdivide central dyslexia.

1.6.1.2.1 Non-Semantic Reading (Direct Dyslexia)

Learners with this type of dyslexia have preserved their reading skills but they have lost their ability to comprehend what they read. This means that they can read correctly regular, irregular or pseudowords but they are incapable of connecting the lexical forms with their meaning (Fotinou, 2011). The semantic processor of the patient seems to be affected while his/her visual recognition of the words and his/her reading skills remain intact.

1.6.1.2.2 Surface Dyslexia

Surface dyslexics can read sufficiently regular words and pseudowords but their reading of irregular words is problematic. This is because they cannot read words in which there is no direct grapheme to phoneme correspondence. More specifically, regular words are those words where there is one to one mapping from print to sound. As Fotinou (2011) describes, in languages like English, which have a lot of irregular grapheme to phoneme mappings, surface dyslexics have greater difficulties than in Greek, where the conversion from letter to sound is one to one. According to Hillis (2002), these patients rely on lexical processing and they tend to regularize irregular orthographic forms. Consequently, they decompose the word to its elements since they cannot process it holistically and they try to apply grapheme to phoneme conversion regular rules. However, patients with surface dyslexia retain their ability of comprehension (Hillis, 2002).
1.6.1.2.3 Phonological Dyslexia

Learners with phonological dyslexia show difficulties in connecting the visual recognition of a word with its phonemic realization. They have difficulties in pronouncing a written word that they have never seen before even if they use it orally. They rely on the visual form of the word and they are unable to perform tasks such as segmentation and syllable splitting. They use the visual image of a familiar to them word in order to handle problems in identifying a non word or an unfamiliar word. In other words, they attempt to recognize words on the basis of their visual form and visual comparison to familiar words.

As researchers (Derousne & Beavois, 1985; Howard & Best, 1996) describe, phonological dyslexics have also orthographic processing deficits and they are not able to read non words because they cannot perform full grapheme to phoneme conversion. As a result, they attempt to recognize the words by comparing the word’s visual form with a similar form drawn from the mental lexicon.

1.6.1.2.4 Deep Dyslexia

This type of dyslexia includes semantic and visual errors, function word substitution, morphological/derivative errors, inability to read non words aloud, easier reading of concrete words compared to abstract words, impaired writing and spelling (Coltheart, Patterson & Marshall, 1987). As Coltheart, Patterson and Marshall (1980) point out, deep dyslexics make mixed semantic-visual mistakes and they seem to have lost their ability to decode phonologically written words.

As far as the semantic level is concerned, Coltheart (1980) stresses that deep dyslexics find concrete words easier to read than abstract ones. In other words, the abstractness or the concreteness of a word is the distinctive feature on the semantic level which affects the reading ability of a deep dyslexic. According to Fotinou (2011), features such as the shape or
quality of a word describe the semantic representation of a concrete or an abstract word. Consequently, a learner suffering from deep dyslexia reads “baby” correctly but “reflection” as “mirror”, “inhabitant” as “people” and “reality” as “fact” (Coltheart et al., 1980). What is more, visual errors are also present. According to Coltheart et al. (1980), “crowd” is read as “crown”, “stock” as “shock”, “crocus” as “crocodile”.

The inability to read non words reveals that the phonemic analysis is impaired and the barrier that limits the activations of multiple similar words to the single and correct ones, does not exist. There are several explanations concerning which hemisphere is impaired and leads to deep dyslexia. According to Newcombe and Marshall (1980) and Shallice and Warrington (1980), an impairment in the left hemisphere, which is responsible for language skills, leads to reading problems. On the other hand, Coltheart (1980; 1983) states that the reading process, which is performed by the left hemisphere, has been damaged and as a result, the right hemisphere partially substitutes this function.

According to Coltheart et al. (1980), function words are also problematic for deep dyslexics who either substitute the function word with a different one (e.g. “for” as “and”, “the as “yes”, “in” as “those”) or express their ignorance by answering that they do not know the word. Function words do not refer to concrete entities and this is what makes difficult for them to read these common words. Moreover, deep dyslexics tend to make derivational/ morphological errors like suffix deletion (e.g. “soloist” read as “solo”), suffix substitutions (“projection” read as “projector). As Funnell (1987) points out, morphological errors in deep dyslexia are in fact visual errors which are related to the frequency and the imageability of the affixed word suggesting that this type of errors is not genuinely morphological.
1.6.2. Developmental dyslexia

Developmental dyslexia is a condition characterized by difficulty in learning to read, write and in achieving expected reading and writing levels despite the person’s average or above average intelligence (Bellugi, Tzeng, Klima & Fok, 1989). These difficulties are not part of a more generalized disturbance of thought, sensorimotor function, intellectual capacity, affective processes or cultural opportunity. The reading and spelling difficulties of people at the end of the 19th century attracted the interest of many researchers. In 1986, Morgan and Kerr (cited in Pumfrey & Reason, 1998) reported the case of Percy, a 14-year-old person of average intelligence who had reading and spelling problems. Morgan was the one that attributed Percy’s impairment to a congenital deficiency to store visual graphemes. In 1917, an ophthalmologist named Hinshelwood defined the case of reading and spelling deficiency and Congenital Word Blindness.

In 1925, Orton suggested that these individuals suffered from a perceptual disorder and they perceived the symbols in reverse. He thought that the problem originated from a delayed establishment of the hemispheric dominance which leads to visual misperception of the correct orientation of the letters. In 1937, Orton defined it as developmental dyslexia. As a result, different types of developmental dyslexia have been proposed by the researchers depending on the difficulties of the patient. Johnson and Myklebus (1967) proposed two types of dyslexia, the auditory and the visual dyslexia.

1.6.2.1. Visual Dyslexia

Visual dyslexia is the most common type of dyslexia as reading requires visual abilities in order to be able to recognize the words which then will be transmitted to other layers of analysis to extract the correct meaning. People with dyslexia have an impaired visual Magnocellular system and as a result, they fail to recognize visual sequences, they
seem to move below or above the page where they focus on only a few at a time, they exhibit unstable binocular fixation, poor visual localization, they miss or misjudge letters or words which are visually similar, they omit articles, punctuation and stress, they use capital letters among the lowercase letters of a word (Fotinou, 2011, p. 25). The above impairments lead to difficulties in fast word recognition with the dyslexic learners treating familiar, unfamiliar and pseudowords in the same way and processing each of them as if it is seen for the first time. According to Stasinos (1999), learners with dyslexia have limited visual memory of the printed words and difficulties in associating the written symbols with their linguistic or auditory content. Consequently, they process each word as new input.

In addition, children with visual dyslexia have difficulties in orientation and in the sequence of symbols (Alevridou, 2010). This causes problems in reading because the child reverses the letters creating, in this way, new words and he/she loses the content of the text which he/she cannot comprehend. Visual dyslexics produce a lot of orthographic mistakes due to their inability to maintain in memory the visual image of a word. Consequently, they write words wrongly when there is no grapheme-phoneme correspondence. For example, in English which is a non-transparent language, there are many irregularly spelt words (e.g. “thought”) with which the dyslexics face problems.

1.6.2.2. **Auditory dyslexia**

Developmental auditory dyslexia is a subtype of dyslexia in which the phonological analysis is crucially related to reading. An essential stage in reading is the ability to convert the grapheme or a complex of graphemes to the corresponding phoneme. As Snowling (1987) states, the failure of dyslexics to convert the printed symbols to the corresponding phoneme is due to a phonological impairment which is the reason for reading deficiency. However, Stein (2001) claims that phonological deficiency is not the only reason that affects dyslexics,
suggesting that one third of the dyslexics have problems of phonological nature. He points out that one third has visual/orthographical problems and the rest has mixed problems of both categories.

The basic difficulties that the children with this type of dyslexia encounter have to do with the wrong representation and composition of sounds, the inability to use the phonological rules, the inability to decode unfamiliar words and retrieve the sounds and the inability to distinguish between the sounds as well as the incapacity to maintain the auditory sequence (Stasinos, 1999, p. 55). Due to their low sensitivity in specific parameters of the speech signal, namely frequency and amplitude, they cannot perceive slight changes of the two parameters which produce different letters. Consequently, this impairment leads to dysfunction in speech recognition (McAnally & Stein, 1996; Tallal, 1980). Dyslexic learners fail to recognize the difference between initial or ending phonemes and they have difficulties regarding consonant sequences (Porpodas, 1992).

Due to their phonological deficiency, the dyslexics attempt to read the words in a holistic manner. According to Porpodas (1992), this approach cannot be effective in the case of rare or low frequency words. Dyslexics read non words and visually unfamiliar words slower than normal readers and they make mistakes (Stein, 1992). The deficiency in phonological analysis affects not only word recognition but also their orthographic production. Due to their difficulties in converting the phonemes to graphemes, learners with auditory dyslexia make orthographical mistakes.

Depending on the dyslexic learners’ mistakes, Boder (1973) improved Johnson and Mykelbusts’ (1967) classification by proposing three types of developmental dyslexia. The first type is dysphonetic dyslexia. Learners with dysphonetic dyslexia fail to analyze the words phonetically and consequently, they read them through the visual route (Fotinou, 2011). They have difficulties in letter or syllable segmentation and they cannot derive the
correct phonetic representation missing such a phonemic analysis. As Boder (1973) states, spelling performance is low because a dysphonetic dyslexic cannot read and spell phonetically. Apart from the words that he/she has already stored in his/her visual lexicon, he/she cannot map the printed symbols to the correct sound and as a result, he/she lacks the ability to spell. According to Boder (1973), in visually similar words, the dyslexic may substitute a letter with another one (“horse” for “house”, “monkey” for “money”).

Dyseidetic Dyslexia is the second type of dyslexia and it is associated with the difficulty to retain the visual imprint of the letters and of the words to the learner’s memory. His/her visual lexicon is poorer and he/she relies on the phonemic analysis while reading. His/her spelling performance is good when spelling regular words but not accurate in the case of grapheme-phoneme mismatch. The third type is Mixed Dysphonetic-Dyseidetic Dyslexia (alexia). It is a severe type of dyslexia as the child carries the symptoms of the previous two types. This type affects the educational status of the individual with the child being unable to connect the letters with the sounds. His/her visual lexicon and his/her visual memory of the letters is poor and he/she makes misjudgments of reversed letters or of letters with slight graphemic differences (Boder, 1973). Their spelling performance is low as they combine the spelling deficiencies of the other two types of dyslexia.

On the other hand, Ellis (1993) offers a more cognitive perspective on her analysis of developmental dyslexia. Two types are suggested, developmental phonological dyslexia and developmental surface dyslexia. The symptoms of Developmental Phonological Dyslexia are similar to those of the acquired phonological dyslexia. People with developmental phonological dyslexia have lost their ability not only to analyze words phonologically but also to process a word as a whole. This deficiency is obvious in their inability to read unfamiliar or new words. The mechanism which converts a letter to a sound is impaired and as a result, the dyslexic cannot read novel or non words that require detailed phonetic
decoding (Fotinou, 2011). Another type is Developmental Surface Dyslexia with people with this type failing to read “irregular” words as opposed to regular ones. This is because they read by converting each letter to a sound, an effective strategy for regular words where the graphemes correspond to phonemes one by one. However, this strategy is not effective when there is a mismatch between the grapheme and the phoneme as in the case of irregular words where dyslexics try to regularize phonetically the orthography (e.g. “island” is read as /island/).

In the field of Cognitive Psychology, Seymour and Evans (1993) proposed three subtypes of dyslexia, namely visual processor dyslexia, morphemic dyslexia and phonological dyslexia. In their model, they assume a visual processor, a phonological processor and a semantic processor. More specifically, a morphemic route, which is associated with mapping the letter sequences as words to their meaning, connects the visual processor with the semantic processor (Fotinou, 2011). Moreover, a morphemic route from the visual processor to the phonological activates vocal responses to printed symbols such as letters and words. Then, a grapheme-phoneme route from the visual processor to the phonological one is used to analyze and phonetically realize new words.

According to Seymour and Evans (1993), in Visual Processor Dyslexia, the visual processor, which is essential for reading, is impaired, affecting analytical reading of non-words but not the whole word recognition mechanism. In the case of familiar words, the dyslexic’s reading skills will be sufficient as letter by letter processing is not required. Seymour and Evans (1993) point out that Morphemic Dyslexia is linked to a deficiency in connecting the visual processor with the semantic or the phonological processor. Consequently, the dyslexic cannot recognize and retrieve words, which causes delayed responses when he/she has to make a lexical/semantic decision or when he/she has to pronounce a word. Finally, in Phonological Dyslexia, a dysfunction in the graphemic route
causes delayed responses to non-words. Seymour and Evans (1993) state that in order to have grapheme to phoneme conversion, two stages are crucial, namely, the retrieval of phonemic elements and the assembly of the elements into an ordered sequence. This means that in phonological dyslexia one or both stages are impaired.

1.7 Dyslexia and Foreign Language Learning

1.7.1 Native Language-based Foreign Language Difficulties and the Linguistic Coding Deficit Hypothesis

Nowadays, more and more people try to learn at least one foreign language in order to conform to the needs of the multilingual society. Consequently, a foreign language requirement has to be fulfilled at schools and universities, posing a burden on many students who exhibit different degrees of difficulties in foreign language learning. Some explanations on this issue included a lack of foreign language aptitude, poor attitude, low motivation, anxiety, inappropriate learning strategies, personality variables (Nijakowska, 2010). However, researchers (Brown, 2000; Ellis, 1993; Lundberg, 2002) failed to prove the effect of these variables on successful or unsuccessful foreign language learning. In the 1960s, Carroll (as cited in Sparks, 1995) claimed that individual differences in FLL are responsible for the overall language ability while Dinklage (as cited in Brown, 2000) found cases in which students failed their FLL courses as opposed to their other courses. Moreover, Dinklage (as cited in Sparks, 1995) was the first to suggest that the difficulties of these children resembled dyslexic problems such as difficulties in learning to read and spell, poor discrimination of sounds in the FL, verbal memory deficits, sound confusions, letter/symbol reversals.

As Nijakowska (2010) points out, in the 1980s a link between foreign language learning difficulties and problems in native language learning was described. According to
Skehan (1991), foreign language learning resembles first language learning faculty and consequently the children who develop faster in their mother tongue, score higher in foreign language aptitude tests (Ganschow & Sparks, 1995; Sparks, Ganschow & Patton, 1995). Moreover, in his research, Chodkiewicz (1986) revealed that people struggling with reading in their native language are prone to failure in their attempts to become fluent in foreign languages. As a result, there is an interdependence between one’s ability to read in his/her native and in his/her foreign language. Kahn-Horwitz, Shimron and Sparks (2006) borrowed the notion of “Matthew Effects” from native language reading research in order to characterize readers with weak English as a foreign language. Strong reading subskills such as phonological awareness and knowledge of letter sounds and names at the first stages of learning to read in a foreign language assure faster and more accurate FL reading acquisition. Developing an ability in a FL triggers progress of a parallel skill in the native language and vice versa. However, the learners must have reached a certain level of proficiency in the FL before such a transfer takes place (Chodkiewicz, 1986).

In 1989, Sparks and Ganschow introduced the Linguistic Coding Deficit (Differences) Hypothesis into the FL literature in order to explain the language problems of poor foreign language learners. As Nijakowska (2010, p. 68) claims, there are three types of linguistic coding deficits, namely the phonological which involves identifying and distinguishing between speech sounds as well as processing the sound/symbol connection, the syntactic, which involves understanding and applying grammatical concepts of a language and the semantic, which is connected with understanding meaning. This hypothesis has its roots in Vellutino and Scanlon (1986) who found that poor readers and writers had problems in their native language and especially in the structural aspects and in phonological coding, which are fundamental to language acquisition. Native language learning problems, such as reading, spelling and writing problems are related to FL learning difficulties (Ganschow & Sparks,
Ganschow, Sparks and Javorsky (1998) support that linguistic factors as well as inefficiency in phonological codes lead to successful or unsuccessful FLL. More specifically, students that have FLL problems have undetectable or overt native language learning difficulties that affect their success in the FL. According to Sparks and Ganschow (1991), the native language skills play a significant role in foreign language learning success or failure because FLL is built on native language skills. A learner who has mild or severe difficulties in native language learning might encounter difficulties in learning a foreign language. As a result, a learner’s skills in the native language linguistic codes affect his/her success in foreign language learning.

According to Ganschow et al. (1998), research has provided support for the LCDH, as good FL learners have exhibited stronger native oral and written language skills as well as FL aptitude than poor FL learners. In particular, successful FL learners have shown stronger native language skills on measures of phonological and orthographic processing and greater FL aptitude than unsuccessful FL learners but no differences in semantic skills (Ganschow, Sparks, Javorsky, Pahlman & Bishop-Marbury, 1991). So, LCDH promotes the idea that foreign language learning is based on native language skills and that phonological/orthographic, syntactic and semantic competences in the native language create the basis for foreign language learning and FL aptitude. Thus, the strength of the native language skills determines the extent up to which a learner can become proficient in a foreign language. Moreover, Humes-Bartlo (1989) found that poor FL learners showed deficits in their native language skills in comparison to successful FL learners. Skehan (1986) reports that children who make rapid progress in their native language are better in FL learning while Service (1992) claims that phonological/orthographic tasks and the ability to compare syntactic and semantic structures predict the skills in second language learning. In their
research, Sparks and Ganschow (1996) showed that students who achieve higher FL grades have stronger native language and FL aptitude skills than students with lower FL grades.

1.7.2 Foreign Language Learning Disability versus Continuum Notion of Language Learning Differences

A disability for FL learning cannot be treated as a distinct type of disability. As Sparks (2006) describes, this notion cannot be separated from more neutral terms such as learning difficulties, at-risk, poor, low-achieving FL learners. However, during the past years the term foreign language learning disability (FLLD) has gained some acceptance and although it is not used explicitly, a relation between learning disabilities (LD) and FL difficulties is implied (Smith, 2002). However, research (Sparks & Javorsky, 1999; Sparks et al., 2002) has shown that LD students do not always experience problems with FLL with many of them getting credits in their FLL courses while many students who could not be classified as having LD, experienced difficulty and failed in their attempts to complete FL requirements. As a result, LD classification is an irrelevant factor in determining the ease of FL acquisition (Sparks, 2006). Consequently, there is no such phenomenon as FL learning disability and language learning ability can be placed on a continuum, with the FLL difficulties ranging from mild to severe. In the majority of cases, learners with dyslexia are placed on the severe end of this continuum. Intelligent students struggling with FL courses should not be perceived as having special disabilities. As Nijakowska (2010) claims, children classified as LD can become proficient in a FL but up to a certain extent. Beyond doubt, native language problems will affect the child’s attempt to learn a FL but they will not impede necessarily successful FL acquisition (Mabbott, 1995).
1.8 Reading and Writing in Normal and Dyslexic Learners

1.8.1 Reading Acquisition

Literacy concerns the ability to read and write, a basic achievement for the student in order for him/her to acquire knowledge and to have access into the linguistic and non-linguistic field. Reading requires intentional and conscious control and it involves linguistic, metalinguistic, metacognitive, pragmatic and metapragmatic activities that are based on language, on the awareness of the relationship between print and spoken word, on the conscious control of the cognitive processes involved and on the purposeful use of written texts, respectively (Nijakowska, 2010). It involves decoding the text, interpreting and comprehending its meaning while writing is associated with encoding the ideas with the use of print. They both require linguistic skills on phonological, morphological, syntactic and semantic levels (Bogdanowicz & Krasowicz-Kupis, 2005).

As far as reading is taken into consideration, it involves the perception of printed input, namely the orthography, and its further processing in order to extract phonetic or semantic information. It demands the activation of the visual, phonological, semantic and linguistic abilities as well as automatized, fast and efficient word-recognition in order to be correctly performed. The linguistic development of the child starts before he/she starts going to school when he/she is 4-5 years old. He/she has a more mature articulation, his/her vocabulary has reached 2,500 words and his/her syntax is more developed. However, this development becomes faster when he/she starts school (Mavromati, 1995).

According to Frith (1985), there are three phases during reading development. The first is called the logographic stage during which the child has not learned to read and write but he/she can visually recognize some familiar words, which have specific morphological characteristics. This stage is based on the memorization of the salient morphological features of a word, which help its form to be retained as a single unit. The second stage is the
alphabetic which refers to the use of phonemes and graphemes and their correspondences. In this stage, the ability to write and spell as well as the ability to decode unfamiliar words is developed. The third stage is the orthographic, in which the child recognizes visually and automatically some morphological combinations while reading. In addition, the child can analyze words into bigger units such as letter sequences and they can convert these into syllables (Kormos & Smith, 2012).

1.8.2 The Developmental Model of Reading in Normal Readers

After the orthographic stage has been introduced and the child has acquired the ability to read, he/she can read correctly the morphological combinations which do not follow the rules of the grapheme-phoneme correspondences (Mavromati, 1995). Throughout the years, several developmental models of reading have been proposed describing the succession of the stages in reading. The most influential is the Dual Route Model, developed by Coltheart (1980). According to Porpodas (1992), it is based on research of Cognitive Psychology and Neuropsychology on learners with acquired dyslexia. According to this model, there are two basic routes, both having the visual information as a starting point. The first is the lexical semantic route and it is applied on familiar words, which are already stocked in the reader’s orthographic lexicon and do not require a detailed phonetic decoding (Aggelou, 2007). Familiar or high frequency words are stored in a lexicon and they are available for rapid retrieval and pronunciation. This route relies on the visual information of the word and it is described as a direct map from the orthographical word to an associated slot in the mental lexicon. The second is the sublexical (or phonological) reading route. It is based on grapheme-phoneme correspondences (GPC) in alphabetic writing systems and it maps the printed symbol to the corresponding phoneme based on previous knowledge of the pronunciation rules (Aggelou, 2007). The outcome will be an assembly of phonemes which
will produce the phonological form of the word and this will be retrieved from a phonological lexicon. This route is used to read not only new but also unfamiliar words that are not part of the reader’s orthographic lexicon.

1.8.3. The Development of Writing Skills

During the logographic phase, the number of the visual images of the words that the child can retain is limited. He/she usually remembers only the shape of the letters or their salient characteristics (Aggelou, 2007). During the school years, the child learns the print form of the letters, the phoneme-grapheme correspondences and he/she moves on to the alphabetic phase.

In the alphabetic phase, the child learns the phoneme-grapheme correspondence and he/she is able to write dictated words by analyzing the phonemes that constitute it with the technique of Grapheme-Phoneme Correspondence. Phonological awareness plays also a very crucial role in this stage in order for the child to be able to process and segment oral speech. In this way, the children are able to recognize and name individual letters rapidly, which reflects a high degree of familiarity with them and correlates with early reading proficiency (Beaton, 2004). The children will be exposed to an alphabetic language so, they must be taught the letters that make up the alphabet. This knowledge of the sounds of letters allows children to become capable readers because this is a predictor of their later reading success (Roberts & McDougall, 2003).

On the other hand, those who have weak alphabetic knowledge are more likely to fail in reading and writing. When they are taught the graphemes and they come into contact with the written language, the visual lexicon instruction begins. Some of the words they encounter attract their attention and they are encoded as a whole in their memory becoming part of their visual lexicon (Aggelou, 2007). When they reach the orthographic stage, children can
memorize faster and easier as images the morphological units, with the orthographic elements of each word being part of the morphological unit of the word (Mavromati, 2004)

1.8.4. The Procedure of Writing in Normal Learners

When the students have to write a word either spontaneously or after dictation, they follow one of these procedures. The first is the direct procedure according to which, if a word is in his/her visual lexicon, then its image is automatically recalled and the correct graphemes are selected in order for the word to be spelled correctly (Aggelou, 2007). The second is the indirect procedure according to which, if the word does not belong to his/her visual lexicon, then there is no image of its orthographic elements to be recalled. Then, the child analyzes the phonemes of the word with the assistance of Grapheme-Phoneme Correspondence and the correct graphemes are selected. However, there is the risk of writing wrongly the word because not all languages obey to the grapheme-phoneme correspondence. The visual lexicon is enriched with new words during the alphabetic phase but it becomes faster during the orthographic stage when the student gains the ability to retain in memory the orthographic elements of the words. In this way, he/she can write correctly words that do not follow the grapheme-phoneme correspondence rules.

1.8.5 Reading and Writing in Learners with Dyslexia

Dyslexic learners have deficits in their phonological awareness as well as in their ability to encode, retain and recall from memory the linguistic representations (Geschwind & Galaburda, 1985). Moreover, they have difficulties in processing oral language and in associating the image of an object with its name by encoding it in their short-term and long-term memory (Coltheart & Rastle, 1994).
During the school years, the dyslexic child is taught the print forms of the language. As a result, he/she starts having difficulties as he/she memorizes the grapheme-phoneme correspondences with delay. Moreover, due to his/her deficits in differentiating between visually or acoustically similar symbols, some letters will be more difficult for him/her. Consequently, he/she will acquire the ability for grapheme-phoneme correspondence later than the normal readers. As far as reading and writing are concerned, due to his/her poor visual lexicon, he/she will adopt the indirect way by analyzing the word into its phonemes and graphemes trying to write or read it, based on this correspondence while at the same time he/she will encounter difficulties in segmenting the words or consonant sequences due to their phonological awareness deficits (Mavromati, 2004).

When the dyslexic child tries to spell correctly a dictated word, which does not belong to his/her visual lexicon, he/she usually writes it wrongly even if he/she has seen it multiple times in books. Learners with dyslexia cannot learn grammatical rules and as a result, this does not help them during spelling. Normal readers write automatically and correctly when the words are in their visual lexicon while dyslexics write each word as in the first time.

1.9 Dyslexia in the Greek and in the English Language

In general, research has shown that transparency in the orthographic system of a language affects the reading and spelling skills of people with dyslexia. As far as the characteristic of “transparency” of an orthographic system is taken into consideration, it means that there is one to one mapping of the printed symbols to the sounds of a language. Different languages show different levels of transparency according to their grapheme to phoneme correspondences. Research has shown that the level of transparency affects dyslexics across languages but in a different way (Landerl, Wimmer, & Frith, 1997 for
Greek is a transparent language with swallow orthography in which there is almost always a direct grapheme to phoneme correspondence. The Greek alphabet consists of 7 vowels which are pronounced the same in all lexical environments. There is only one possibility of vowel combinations but again each combination produces a specific phoneme. In Greek, stress does not differentiate the pronunciation of the vowels but it affects their quantity. Some Greek vowels can be mapped to more than one graphemes. For example, the phoneme /i/ can be written in six different ways (ι, η, ν, ι, ε, οι) and the phoneme /o/ can be written both as /o/ or as /ο/. As far as the Greek consonants are concerned, they have one phonemic mapping.

According to Pavlidis and Giannouli (2003), Greek dyslexics make seven major reading errors as opposed to normal readers. Based on Stathopoulos and Pavlidis’ (1997) research the reading error categories involve a) substitutions, b) omissions, c) additions, d) repetitions, e) hesitations, f) correction-wrong, g) correction-right. Moreover, Pavlidis et al. (1997) revealed quantitative spelling differences between Greek dyslexics and normal learners. The mistakes of Greek dyslexics involved a) many omissions of intonation, b) many letter substitution, c) plenty syllable and word substitutions and omissions, d) many visual and grammatical errors. As far as the omission of the intonation sign is taken into account, Pavlidis et al. (1997) state that it can be attributed to the attentional deficit and impulsivity problem. The absence of significant phonological errors shows that in a transparent language the dyslexics tend to spell directly the phonetic representation.

English on the other hand, has a deep, opaque orthography as it is a language in which more than one graphemes may correspond to one sound (“tough” - /taf/). Consequently, English dyslexics have difficulties in acquiring the ability of phonological
encoding due to the irregularity of the English orthographic system as opposed to dyslexics in transparent languages such as Greek, Italian, German (Landerl et al., 1997). In their research, Pavlidis and Giannouli (2003), compared the performance of U.S.A., English speaking to Greek dyslexics and found that there are several differences, which can be the result of the different orthographic systems. The U.S.A.-English speakers did more phonological errors since the English orthography is not as transparent as the Greek. In other words, this means that the decoding of the English phonology is a more difficult task for English dyslexics than for Greek dyslexics. The main errors which were produced were phonological, visual, grammatical, semantic as well as substitutions, omissions, omissions of intonation in Greek, additions, reversal of syllables/letters/words and repetition of syllables/letters/words.
CHAPTER TWO

METHODOLOGY

Introduction

So far, we have provided the theoretical background and the basic concepts associated with dyslexia and how it affects literacy development and foreign language learning. In this chapter, the main concern is the description of the research itself. In the first part of this chapter, there is an analysis of the child’s profile based not only on my personal information from my encounters with the child but also on the child’s English and Greek teachers. In the second part of the chapter, the tasks and the procedure followed in order to carry out the research will be provided and in the third part there are some clarifications about the extra material which was used during the research.

2. Aim of the Study

The aim of the present study is to examine the reading, writing and narrative skills of a dyslexic child. More specifically, this paper tries to find out the kind of mistakes a dyslexic child makes during reading, writing and narration and to compare his performance and the mistakes he makes in Greek, which is the child’s mother tongue with his performance in English, which is his first L2. This is a more qualitative study of the kind of mistakes the child makes in the two languages, although a quantitative analysis will be also given. The research questions which concern the present study are the following:

(1) What kind of mistakes does a dyslexic child make in writing and reading in Greek and what in English?

(2) What kind of mistakes does a dyslexic child make in narratives in Greek and what in English?
(3) Is the child’s performance in Greek (mother tongue) better than in English (L2)?

(4) Does the transparency of the orthography affect the child’s performance in reading in the two languages?

Consequently, the research hypotheses which emerge based on our theoretical background of dyslexia and which we expect to find in this study are the following:

(1) The dyslexic child is expected to do many errors in writing such as spelling errors and to make many reading mistakes due to his deficiencies in phonological processing and his memory deficits.

(2) In narratives, the dyslexic child is expected to have difficulties in narrating a story such as syntactic and semantic errors and problems in comprehending and answering questions due to his problems in language manipulation and working memory deficits.

(3) The dyslexic child’s reading performance in his mother tongue (Greek) is expected to be better than in his L2 (English) due to the transparency of the orthographic system.

(4) According to the Linguistic Coding Differences Hypothesis, the child’s performance and weaknesses in his mother tongue affect his performance in his FL and vice versa. Consequently, the dyslexic child is expected to have similar difficulties in both languages.

2.1. Student’s Profile

The study took place in the 3rd Model Experimental School of Evosmos in Thessaloniki, Greece during the school year 2015-2016. This is a primary school located in a western suburb of the city with students of low to medium socioeconomic status. The school is supervised by the Department of English Language and Literature of the Aristotle
University of Thessaloniki, which is responsible for designing and monitoring the school curriculum.

This study is a case study since only 1 child was tested and examined in order to observe his reading, writing and narrative abilities in Greek and English. He is a 12-year-old boy of the sixth grade of primary school. He has a Greek mother and a Greek father and he is of Greek origin. Subsequently, his mother tongue is Greek and English is his L2. He attends a public school and he was diagnosed with dyslexia by K.E.Δ.Y when he was 8 years old. According to his teachers and parents, he also suffers from some coordination and motor skills problems. As a result, during the first years of school he found it very difficult to write and this is why he has visited a therapist. However, nowadays the coordination problem is not obvious while writing but it is obvious while talking or playing.

For the purpose of this research, I met the child four times. The visits were not close in time to one another. During my first meeting with the student, I asked him some introductory things in order to know him better. He said that he prefers English to Greek because for him, it is a better and easier language and that he does not attend extra English lessons outside the school environment apart from some videos and series that he watches online at home. He also claimed that he does not have difficulties in English but vocabulary is a little bit hard for him. He likes writing, reading and especially speaking in English, while in Greek, he finds tests very demanding, causing him in this way anxiety. Moreover, he likes Maths and Physical Education.

According to his teachers, he is an introverted child but very willing to take part in the activities and tasks. Concerning his English lessons, according to his teacher, he is very communicative and willing to take part in the lesson. He has a very good pronunciation in English, he is very expressive, he reads everything and he has no difficulty in reading and recognizing the letters of the alphabet. He also comprehends whatever he reads, he is very
good at everything except for the writing tasks in which he has difficulties. In addition, his English teacher stressed that his reading pace is relatively slow, he has difficulty in making friends and in conforming but he tries very hard and he does not leave anything incomplete. Moreover, the child was exposed to Phonics lessons from the second up to third grade for 5 and 8 hours per week, respectively.

As for the Greek lessons, his teacher revealed that the child has difficulties in writing and in oral reading as well, where his pace is very slow. Moreover, he has problems in reading comprehension exercises, in Maths, Physics and Language. He is good at Geography, History and Religion but he does not seem to participate in class. In addition, he makes a lot of spelling mistakes, he guesses at words, he skips and confuses words, he gets lost, he does not often use punctuation and stress and he sticks words in reading and writing. According to his teacher, the child was exposed to CLIL as a teaching method from a young age, namely from the fourth grade and he was at his third year of exposure. He was exposed to CLIL for 4 hours in the fourth grade in the subjects of Arts & Crafts and Environmental Studies, 4 hours in the fifth grade in Geography and Religious Education and in the sixth grade for 2 hours either in Religious Education or Physics.

2.2 Tasks

2.2.1 LAMDA-Test

LAMDA-Test is a tool for identifying the weaknesses and language learning difficulties of students, who are in the second grade of the primary school up to the second grade of secondary school. This test examines not the school performance of children but the abilities and difficulties that indicate language learning difficulties. The tasks which are included in this test have the format of a game and they test 8 main domains, namely
orthography, morphosyntactic processing, oral and written language comprehension, vocabulary, working memory, non verbal cognitive ability and musical abilities.

As far as the specific research is concerned, LAMDA-test has been addressed to the student three times. The first time was in 2012 when he was diagnosed with dyslexia, the second time in 2013 and the third time in 2016. The aim was to identify whether there was a development in these skills throughout the years. However, the results are not consistent and the child shows deterioration in some skills. As a result, LAMDA-test will not be taken into consideration during our analysis.

2.2.2 Reading Ability

The reading ability of the child was tested by giving him to read two stories in Greek and two stories in English all taken from his school books. The aim of this task was to examine the child’s difficulties and to compare his performance in Greek and in English. Starting from Greek, he had to read a story by Eugenios Trivizas, named “The very greedy whale that ate the sea” [Η πολύ λαίμωρη φάλαινα], which was familiar to him and already taught and read by his Greek teacher. Then, he had to read in Greek another story named “I have to be Brave” [Πρέπει να φανώ γενναιός]. This story was an extract from the book “Nicholas on Holiday” by Goscinny and Sempé and it was retrieved from the school book of the child but it was not taught to him. So, both Greek stories were retrieved from the school book, written by Iordanidou, Kanellopoulou, Kosma, Koutava, Oikonomou and Papaioannou (2013). After each story, comprehension questions were asked in order to examine whether the child comprehended what he had just read.

As far as English is concerned, the first story which was read by the child was retrieved from his book and it was taught to him by his English teacher. The story was named “Freedom of the Press”. Then, another English story named “Shock for the secret seven” was
read by the child. In this case, the story was not known to him. In both cases, the stories were
taken from the book “Full Blast 1”, written by Mitchell (2008). Again, after each story
comprehension questions were addressed in order to find out whether the child
comprehended what he was reading and whether he could speak fluently in each language.

2.2.3 Writing Skills

In order to evaluate his writing skills, another task was assigned to the student. During
our meeting, the student was asked to write in English about his favorite superhero.
Moreover, his Greek teacher asked him to write in Greek a text about their school trip. In
both cases, the topics which were chosen were not difficult and they were interesting enough
to attract his attention. The aim of this task was to identify the difficulties of the child in
writing and to compare his performance in Greek and in English.

2.2.4 Edmonton Narrative Norms Instrument (ENNI)

ENNI is an assessment tool that collects information from children through
storytelling. Pictures that depict a story are presented to the child and the child tells the story
to the examiner. Picture sets are drawn by professional cartoonists and they range from a
simple story containing two to three characters to a complex one with four characters. The
analysis of the sample may contain story information, referring expressions as well as
standard language analyses such as number of different words, mean length of
communication unit and subordination index (Schneider, Dubé, & Hayward, 2005).

Stories should be evaluated using both macrostructural and microstructural analyses
so as to reveal the range of narrative skills. More specifically, macrostructural analyses such
as Story Grammar evaluate the content and organization of stories. Stories are coded for the
information they contain that correspond to a story grammar (SG) unit. These are units of
information that are characteristic of stories judged by adults and children to be “good”
stories (Schneider et al., 2005). The basic units are the characters in the story, the location,
the activity and/or habitual state, the initiating event, the internal response, internal plan,
attempt to obtain a goal, the outcome of the attempt and the reaction. As far as first mentions
of concepts, objects, characters, places are concerned, they can be considered adequate if they
are appropriate for the listener’s knowledge and the preceding linguistic context. Young
children introduce referents in a confusing way, often using personal pronouns as if the
referent is already mentioned. Their ability to introduce referents appropriately develops
during the early school years. On the other hand, Microstructural Analyses focus on the
relationship among parts of stories (Schneider et al., 2005). ENNI stories are also language
samples and they can be analyzed and assess children in other languages as well.

The main focus of this study is the evaluation of the content and organization of
stories that is macrostructural analysis. In this paper, the story was initially told to the child,
who had to repeat it afterwards. This means that the child had to retell the story after the
examiner had finished his narration. Two stories were used for Greek, one simple and one
complex and two stories for English, one simple and one complex. The examiner presented
the images to the child while telling the story and in the end, the child told the story. The aim
was to assess the quality of the child’s stories, his working memory skills and to identify
possible grammatical mistakes during his narration in order to compare his performance in
Greek and in English in both simple and complex stories.

2.2.5 Interviews

Interviews of the teachers that taught and used to teach the child, took place. Although
this tool will not be used in the paper as a primary research tool, it was a good opportunity to
find out more about the child, his learning weaknesses and strengths by his teachers. More
specifically, the Greek and the English teacher of the child were interviewed and asked about his reading, writing and speaking skills. However, our discussions were not recorded but I was taking notes of everything that was important for my paper. Then, his English teachers who taught him Phonics during the second and third grade were asked about this child’s initial performance, strengths, weaknesses and development over the years. These discussions were recorded together with my discussion with Mr. Tsiadimos, who has worked a lot on Phonics. The interviews took place during the breaks and the teachers provided a deeper insight to the issue.

2.3 Extra Material

In order to further motivate the child and make him more willing to take part in all the tasks, extra material was also used. Together with the reading and writing material which was used, drawings were given to the young learner who seemed very excited. After the end of each meeting, stickers were also given to him in order to thank him for his participation to the study.
CHAPTER THREE

RESULTS

Introduction

In this chapter the research findings will be illustrated. Taking into account the results from the reading, writing and narrative tasks, we will try to identify the difficulties that the child has in each skill in both languages. What is more, some conclusions will be drawn in order to compare the child’s performance in the two languages and to be able to answer in the final chapter of the study, the research questions of the paper.

3.1 Reading Ability

3.1.1 English

As far as English is concerned, the reading ability of the child was tested by giving him to read two stories in English, one already taught and one new, both taken from his school book, written by Mitchell (2008). Starting from the known story named “Freedom of the Press”, the results have shown that the child’s reading pace was normal and he was very expressive during reading. He did not skip any lines, he did not get lost in the text and he was very willing to read. However, he made two punctuation mistakes “…students’ stories. Dr. Carbles…” and “…of the press? Mrs. Lilly…”, where he did not stop reading in the full stop and in the question mark but he continued reading as if there was no change of sentence. Moreover, he added “the” once while reading and he omitted “of” once and “the” twice while reading.

As we know, learners with dyslexia use to replace words with other words that are visually similar and have the same meaning. In this case, the student also replaced the word “room” with the word “classroom” both having the same meaning. In addition, he stressed
wrongly the word “parading” and he added the suffix –s to the word “lesson”. He had also problems reading the verbs in the text in the correct tense. More specifically, he omitted once the suffix –ed from the verb “arrest” and he read the verb “came” as if it was in the present tense three times. As far as the comprehension questions are concerned which took place after reading, he seemed to comprehend the text and he could answer all the questions. However, when I asked him to answer the same questions in Greek as well, he had difficulty doing it, he used a lot of English words and he could not find the corresponding Greek word. Moreover, he needed much time to think the answer in Greek and many times he was telling me in Greek “How can I say it?” [Πώολανη πώ;] and “Say it” [Πεον].

As far as the second story, named “Shock for the secret seven”, is concerned, it was a story unfamiliar to the child which he saw for the first time. During the whole procedure, the child was very willing to read. His pace of reading was slower than in the known story while at the same time he did some pauses when the next word was difficult for him to read. While reading he was very expressive, he did not stress any words wrongly and he did not seem to guess the words. However, he omitted the words “it”, “the”, “a” and “never” and he added the preposition “on” once. He replaced once the pronoun “her” with the article “the” and the pronoun “him” with the pronoun “you”. Moreover, he had problems with reading the past tense of the verb “have” which he read as “have” instead of “had” and he omitted the suffix –ed from the verb “look” which he read as “look” instead of “looked”. He also made six pronunciation mistakes, pronouncing wrongly the words “Bonaparte”, “talking”, “talk”, “talks”, “half” and “admiringly”. He had difficulty in pronouncing the adverb “certainly” which in the end he pronounced correctly and he read the name “Peter” as “Pam” once. Finally, he made a punctuation mistake in the sentences “…be going. I won’t forget…” where he did not stop in the full stop but he continued reading as if it was the same sentence. As for the comprehension questions, the child seemed to have more difficulties in
comprehending this story than the previous one. Because of his unfamiliarity with this story, which was new to him, it seemed more difficult for him to comprehend and read at the same time.

3.1.2 Greek

The first story read in Greek by the child was Eugenios Trivizas’ story named “The very greedy whale that ate the sea” [Ἡ πολύ λαίμαργη φάλαινα]. This story was familiar to the child as he had already read it from the school book, written by Iordanidou et al. (2013). At first, the child was not so expressive while reading, his pace of reading was slow and it became slower and slower as the text became more difficult. His reading lacked punctuation while other times he stopped where he was not supposed to stop as if there was a comma or a full stop there. For example he was reading the sentences “Τα χαψα όλα –είπε-μία κι έξω, ώρα τώρα…” and “Αχ μανούλα μου, γλυκιά μανούλα” as if there was a full stop in the position of the comma. Other sentences where the reader stopped as there was a full stop were “ώρα τώρα να χωνέψω τα καβουράκια”, “είδε τότε να χρονται από μακριά” while he used to skip the full stop and read the sentences as if there was one as for example in “…τις μέδουσες τις κακομοίρες. Είδε τότε…”. Moreover, the child was pointing with his finger while reading in order not to skip a line or a word. He added the preposition “με” once while reading and did pauses when the next word was very difficult for him to read. In addition, he stressed wrongly twice the words “κανό” which he pronounced “κάνο”, “μία μία” was read as “μιά μιά” and “μία” as “μια”. The word “φόρα” was read as “φορά”, “βουλιμία” as “βουλιμία”, “τα χαψα” as “τα χάψα” and “μέδουσες” as “μεδούσες”.

He also substituted the word “καβουράκια” once with the visually similar word “κουβαράκια” and once with the synonymous word “καβούρια” by omitting the suffix of the word. He also read the word “πρέπει” as “τρέφει” by substituting the initial and the middle
letter “π” with the letters “τ” and “φ” respectively, the word “κάνει” as “κάμει” by substituting the consonant “ν” with the consonant “μ” and the word “πέλαγα” as “πέλεγα” by substituting the vowel “α” with the vowel “ε”. In addition, he seemed not to pay attention to the suffix of the words and he replaced “α” with “ε” reading the verb “ήθελε” as “ήθελε” and “-αν” with “ε” reading “βγήκαν” as “βγήκε”. He had also difficulties in reading the short forms of some words which he read as if they were not short. For example, he added an “ε” and he read the verb “γράφει” as “γράφει”, the verb “κάνουν” as “κάνουνε”, “μ’έκρυβε” as “με έκρυβε” while he read “κι άνοιξε” as “κατά άνοιξε”. When he had difficulty in reading some words he was asking me if he was reading the words correctly, as in the words “μαργαρίνη” and “αλογατάκια” showing in this way his lack of confidence in reading. He also hesitated in reading some words that he found difficult and more specifically, the words “μπανέλες”, “τρομάρα”, “τρέμοιλα”, “φόναξε”. As far as the comprehension questions are concerned, he seemed to have comprehended the text and he also answered the questions correctly.

Then, he had to read in Greek another story named “I have to be Brave” [Πρέπει να φανώ γενναίος], an extract from the book “Nicholas on Holiday”. The child had not seen this story before which was new to him, although this story was retrieved from his school book (Iordanidou et al., 2013). His reading style lacked punctuation while other times he stopped where he was not supposed to stop as if there was a comma or a full stop there. For example, he was reading the sentences “…πού θα πάμε διακοπές. Η μαμά μου…” and “…έίναι κατάλληλη, είσε o μπαμπάς,” as if there was a question mark in the position of the full stop and the comma, respectively. Other sentences where the reader stopped as there was a full stop in the position of the comma were “…συζητούσαμε μέσα, εκεί που βρήκαμε…”, “…κάνει πολύ καλό, θα είσαι με φίλους…” while he used to skip the comma and read the sentences as if there was no pause in “Σίγουρα, είναι η πρώτη φορά…”, “…θα μείνεις μόνος
Furthermore, he used to pay no attention in the question marks and read the sentences as if there were in the affirmative such as in “Εστι δεν είναι;”, “…θα μείνουμε σε ξενοδοχείο;”, “…όπως ο Ινδιάνος;”, “…να στήσουμε σκηνή;”, “Ν’ανάψουμε φωτιά;”, “…μεγάλα ψάρια στη μαμά;”. Moreover, the child was pointing with his finger while reading in order not to skip a line or a word. He omitted the function words “το”, “και” once while reading and the article “του” twice. In addition, he did pauses when the next word was very difficult for him to read. More specifically, he stressed wrongly the verb “κάνεις” which he read as “κανεις”, he read “κατασκηνώσεις” as “κατασκήνωσεις” and “επιστρέψει” as “επιστρέψει”. He also substituted the word “μέσα” with the visually similar word “μετά”, by substituting the middle letter “σ” with “ε”, the verb “είμαι” with “μένα”, the pronoun “μου” with “σου”, “το” with “τον”, “τα” with “το”. In addition, he seemed not to pay attention to the suffix of the words and he replaced “α” with “ε” reading the verb “έτρεξα” as “έτρεξε”, “-ω” with “-ουν” reading “κάνω” as “κάνουν”. He also read the word “χέρια” as “χέρι” without paying attention to the suffix that shows plurality and “συζητήσουμε” as “συζητούσαμε” without paying attention to the tense of the verb. He had also difficulties in reading the short forms of some words which he read as if they were not short. For example, he added an “ε” and he read the verb “ζεσταστόταν” as “ζεσταστάτηκαν”, the verb “ήταν” as “ήτανε”, “ήμουν” as “ήμουνα” while he read “κι η” as “και η”. Moreover, he read the short forms of the pronoun and the verb as if they were not contracted. For example, he read “μ’αφήσεις” as “με αφήσεις”, “μ’πιάσε” as “με πιάσε”, “μ’άφησε” as “με ἀφήσε”, “μ’αγκάλιασε” as “με αγκάλιασε”, “τα’αγγίξανε” as “την αγγίξανε”. He also hesitated in reading some words that he found difficult and more specifically, the word “κουβέντιαξαμε”. While reading, his pace was very slow and it became slower and slower as time passed. He also used to go back in the sentence and read it again while
sometimes he was sighing while reading. As far as the comprehension questions are concerned, he seemed to have comprehended the text and he also answered the questions correctly.

Tables 1 and 2 as well as Charts 1 and 2 illustrate the main mistakes that the child with dyslexia made in the two languages in both Greek and in English. In general, the results revealed that there are some mistakes that are common in the two languages such as additions and omissions of words, lack of punctuation, wrong stress, addition and omission of suffixes, word substitutions with visually similar words. However, the results showed that in Greek, the child made more punctuation and stress mistakes, he used to replace the short forms of the words and substitute the suffixes of the words while in English, he made more mistakes in reading the tenses correctly.

<table>
<thead>
<tr>
<th></th>
<th>Pace of reading</th>
<th>Punctuation mistakes</th>
<th>Additions of Words</th>
<th>Omissions of Words</th>
<th>Stress wrongly</th>
<th>Omission of suffixes</th>
<th>Addition of suffixes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>English</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(known story)</td>
<td>Normal</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>English</td>
<td>Slow</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>(unknown story)</td>
<td>Very slow</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>8</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Greek</td>
<td>Slow</td>
<td>12</td>
<td>0</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 1: Reading Errors in English and Greek
<table>
<thead>
<tr>
<th></th>
<th>Word substitutions with visually similar (different meaning)</th>
<th>Substitution of suffixes</th>
<th>Substitution of words with visually similar (same meaning)</th>
<th>Problems with tenses (suffix deletion+irregular forms)</th>
<th>Pronunciation mistakes</th>
<th>Short forms replacement</th>
</tr>
</thead>
<tbody>
<tr>
<td>English (known story)</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>4 (1+3)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>English (unknown story)</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2 (1+1)</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Greek (known story)</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Greek (unknown story)</td>
<td>5</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>9</td>
</tr>
</tbody>
</table>

Table 2: Reading Errors in English and Greek
Chart 1: Reading Mistakes in the Known Stories in English and in Greek
3.2 Writing Skills

3.2.1 English

In order to evaluate his writing skills and examine if he has certain difficulties in writing, the student was asked to write in English about his favorite superhero. While he was writing, he asked several times about the spelling of some words that he did not know as well as the equivalent English words. Overall, although his handwriting seems illegible, his condition is not as severe as in other children with dyslexia. He did not use punctuation at all,
he made two spelling mistakes writing “beucuse” and “viricles” instead of “because” and “vehicles” and he once wrote the words “good armor” as one “goodarmor” and “gadgets that” as “gadgetsthat”. Moreover, he seems to have difficulty writing the letter “r” while at the same time the letter “h” is similar to “b”. In addition, he seems to confuse “he’s” with “his” writing “his got” and “hes interesting” while he uses “and” in order to link all the sentences.

3.2.2 Greek

In order to examine the child’s writing abilities in Greek, his Greek teacher assigned to him to write about their school trip. Overall, his handwriting is illegible but his condition is not as severe as in other cases of children with dyslexia. In his writing assignment which was 19 lines long, the child used no punctuation but only three full stops and one comma while he used to link the sentences with the word “μετά”, which he used nine times and the word “κατ”, which he used seven times. After the full stops, the child wrote the first letter in lowercase letters instead of capitals. Moreover, the child did not stress many words some of them being “πηγαμε”, “παιζαμε”, “παρουμε”, “μετα”, “πισο”, “εκει”, “προσπαθησαμε”, “πρωτα”. While he was writing, the words were not on the lines but some of them were a little above while others below the lines. In addition, the child made many spelling mistakes such as “πισο”, “ορεο”, “πολι”, “προτα”, “γύπεδο”, “πηγέμαμε”, “σφηνηχτρες”. He used to write the words without leaving any space between them such as “πηγαμεσεξανολιορεο”, “ληπαριομετα”, “σεσναγουεδο”, “καπαιζαμε”, “πουκαθόμασταν”, “πηγαμεπίσο”, “μουάρεσε”.

Furthermore, the child confused “o” and “ω”, “ε” and “αι” which are acoustically similar and he wrote “ορεο” instead of “ωραίο”, “πίσο” instead of “πίσω”, “πρότα” instead of “προτα”. He also confused the letters “ζ” and “Ξ” which are visually similar writing “παιζομε” instead of “παιζουμε” and the letters “δ” and “γ” writing “λίδο” instead of “λίγο”
and “πήδαμε” instead of “πήγαμε”. He also omitted one syllable of the word “συγκρούμενα” which he wrote as “συγκρόμενα” and he had difficulty distinguishing between the article “της” and its plural “τις”. Finally, in the end of his essay he used twice the word “τελικά” in the same sentence not only in order to indicate the end of his essay but also in order to link the last two sentences which he did not discriminate with a full stop. In this point, it is important to mention that the written assignments of the child in English and in Greek that are in the end of this paper in the Appendices section are not so clearly scanned and there may be some of the aforementioned details that are not distinctly illustrated due, for example, to the confusion between the teacher’s pen in Greek and the child’s pencil or to the child’s faint handwriting. However, Table 3 and Chart 3 illustrate the child’s writing mistakes in Greek and in English. In general, the child seems to have more difficulties while writing in Greek than in English, a fact that is very interesting and unexpected.

<table>
<thead>
<tr>
<th></th>
<th>Use of Punctuation</th>
<th>Spelling mistakes</th>
<th>Writes words without leaving space</th>
<th>Confusion of acoustically similar words</th>
<th>Confuse visually similar letters</th>
<th>Unstressed words</th>
<th>Links the sentences with</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>English</strong></td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>Written Words in English are not stressed</td>
<td>And (2)</td>
</tr>
<tr>
<td><strong>Greek</strong></td>
<td>4</td>
<td>7</td>
<td>7</td>
<td>1</td>
<td>6</td>
<td>8</td>
<td>«μετά» (9)</td>
</tr>
<tr>
<td></td>
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Table 3: Writing mistakes in English and Greek
3.3 Narrative Skills

3.3.1 English

The first English story named “The Giraffe and the Elephant: Ball” which was addressed to the child, was a simple story as it contained only two characters, namely a giraffe and an elephant. This story was retrieved from Schneider et al., (2005) and the child had to retell the story, which the examiner had told him. More specifically, the examiner narrated the story as follows:

Once upon a time, there was a giraffe and an elephant. The elephant was playing with a ball and the giraffe was thinking of taking it from the elephant but then the elephant threw it accidentally into the water. The
giraffe fell into the water to catch the ball. The giraffe finally caught the ball and gave it back to the elephant. The elephant was very happy.

Based on this story, the child started retelling the story. In his narrative, the child included all the necessary information that indicated the quality of his story. For example, the child named the two characters of the story, the giraffe and the elephant, he mentioned the Initiating Event [IE] which sets off the story's events and causes the protagonist to respond in some way, namely the fact that the characters had a ball which fell into the water and then, he referred to the internal response, which is the reaction of protagonist to the initiating event, namely the giraffe’s decision to take the ball. After that, the child described the Attempt [ATT] to obtain the goal, namely the giraffe’s attempt to catch the ball, the Outcome or Consequence of the attempt that is the fact that he caught the ball and the Reaction [R] of the characters, that they are happy now.

During his narration, the child made no grammatical mistakes, he was very concentrated and his story was very close to what he had heard before. He used referents and the definite and indefinite articles correctly, he used personal pronouns and the definite article “the” when the referent was already mentioned. As far as the comprehension questions are concerned, the child answered correctly to all the questions that demanded information about the setting, the characters and the events.

The second story which was narrated to the child was a complex story named “The Rabbit and the Dog: The Balloon” (Schneider et al., 2005). This story contained four characters, a rabbit, a dog, an old rabbit selling balloons and the rabbit’s mother. The child had to retell the story which the examiner told him. More specifically, the examiner narrated the story as follows:
Once upon a time, there was a rabbit and a dog. The dog had tied a balloon in a cart. The rabbit came and wanted to untie the balloon. The balloon flew away and this made the dog very angry. Then, the rabbit saw an old rabbit, who had many balloons in his hands. He ran to take one but the old rabbit told him that they cost 5 euros. The rabbit and the dog were very disappointed. Then, the rabbit saw his mother and he asked her to buy a balloon for him and the dog. She finally bought two balloons and she gave one to the rabbit and one to the dog. They were all happy.

As far as the story quality is concerned, the child referred to all the characters during his narration. He described the Initiating Event that is the rabbit’s desire to untie the balloon and the fact that the balloon flew away and the Internal Response that is the fact that the dog was angry after what the rabbit did. However, he did not seem to refer to the specific character who attempted to buy balloons but he referred to this as both the rabbit and the dog asking the old rabbit for balloons. In addition, he described the outcome of the attempt by telling that rabbit’s mother bought balloons for them and that the characters’ feeling was happiness in the end of the story.

During his narration, the child made some grammatical mistakes. For example, although he started his narration in the past tense in the middle of the story he turned it to the present tense, “sees” and “goes” instead of “saw” and “went”, without using a keyword or an indicator that necessitates this specific tense. Moreover, he made some mistakes in forming the past tense of some irregular verbs namely “flow away” instead of “flew away”, “go away” instead of “went away”. However, his story was very close to what he had heard before despite the fact that he had more difficulties in this story than in the simpler one. He used referents and the definite and indefinite articles correctly, using personal pronouns and
the definite article “the” when the referent is already mentioned. As far as the comprehension questions are concerned, the child answered correctly to all the questions that demanded information about the setting, the characters and the events.

3.3.2 Greek

In Greek, the two stories were also taken from Schneider et al., (2005). The first story which was narrated in Greek to the child was named “Ο Λαγός και ο Σκύλος: Το Πικνικ”. [The Rabbit and the Dog: The Picnic]. This was a simple story as it contained a rabbit, a dog and towards the end of the story, a doctor. The child had to retell the story which the examiner told him. More specifically, the examiner narrated the story as follows:

Μια φορά κι έναν καιρό ήτανε ένας λαγός κι ένας σκύλος και πήγαιναν για πικνικ. Κάθισαν και αφού έστρωσαν άρχισαν να τρώνε ό,τι είχαν φέρει μαζί τους. Ο λαγός έφαγε πάρα πολύ και άρχισε να ξαλιζεται. Λιποθύμησε και ο σκύλος έτρεξε και βρήκε έναν γιατρό ο οποίος τον εξέτασε. Ο γιατρός δεν ήθελε να πάει αλλά τελικά πήγε να εξετάσει το λαγό. Ο λαγός στο τέλος έγινε καλά και ήτανε όλοι χαρούμενοι.

As far as the story quality is concerned, the child referred to all the characters during his narration. What is more, he described the Initiating Event that is the characters’ picnic and the rabbit’s condition after he ate too much. Then, he referred to the Internal Response, namely the fact that the dog thought to search for a doctor. He described the dog’s attempt to find a doctor and the outcome of the attempt, namely the fact that the rabbit was well in the end. However, in the end of the story he did not seem to refer to the reaction of the characters but only to the fact that they lived happily ever after.
During his narration, the child made no grammatical mistakes. His story was very close to what he had heard before and he used referents and the definite and indefinite articles correctly, using personal pronouns and the definite article when the referent is already mentioned. However, sometimes he was using the words “κουνέλι” and “λαγός” to describe the same character and he once said “πηγάινανε να πάνε”. As far as the comprehension questions are concerned, the child answered correctly to all the questions that demanded information about the setting, the characters and the events.

The second story which was narrated in Greek to the child was named “Ο Ελέφαντας και η Καμηλοπάρδαλη: Το αεροπλανάκι”, [The Elephant and the Giraffe: The Airplane]. This was a complex story as it contained four characters, namely a giraffe, an elephant, a lifeguard and a lady elephant. The child had to retell the story which the examiner narrated to him before. More specifically, the examiner narrated the story as follows:

Μια φορά κι έναν καιρό, υπήρχαν μια καμηλοπάρδαλη και ένας ελέφαντας. Η καμηλοπάρδαλη είχε ένα αεροπλανάκι. Ο ελέφαντας σκέφτηκε να πάρει το αεροπλανάκι για να παίξει. Όταν το πήρε, το αεροπλανάκι έπεσε στο νερό. Η καμηλοπάρδαλη θύμωσε. Τότε, ένας ναυαγοσώστης ήρθε και ο ελέφαντας του είπε τι έγινε. Εκείνος προσπάθησε να το πιάσει αλλά δεν μπόρεσε. Τελικά μια κυρία ελεφαντίνα ήρθε και έπιασε το αεροπλανάκι με μια απόχη και το έδωσε στη καμηλοπάρδαλη. Η καμηλοπάρδαλη χάρηκε πάρα πολύ.

As far as the story quality is concerned, the child referred to all the characters during his narration. What is more, he described the first Initiating Event that the giraffe had an airplane with which he was playing, the first internal response, namely the desire of the
elephant to take it and play with it, the attempt of the elephant who finally took it, the consequence of the attempt with the airplane falling into the water and the reaction of the giraffe which was very angry. As far as the second initiating event is concerned, the child referred to the lifeguard who came, the internal response which is his thought to catch the airplane, the attempt to catch it, the consequence of this attempt which is his failure to catch it. Finally, the third initiating event, namely the appearance of the lady elephant was mentioned by the child, the internal response to catch the airplane, her actual attempt to catch it, the consequence of this attempt, namely her success and the reaction of the characters, who were happy.

During his narration, the child made some grammatical mistakes. For example, although he started his narration in the past tense in the end of the story he turned it to the present tense, “έρχεται”, “δίνει”, “παίρνει” and “νιώθει”, without using a keyword or an indicator that necessitates this specific tense. However, his story was very close to what he had heard before despite the fact that he had more difficulties in the Greek story than in the English ones. More specifically, while narrating, the child did many pauses trying to find the correct word to express his thoughts and the correct Greek word. When he could not find it he was telling me “πώς το λένε;”, “δεν μου έρχεται η λέξη”, “μπορώ να το πω στα αγγλικά αλλά δεν θυμάμαι την ελληνική”.

He used referents and the definite and indefinite articles correctly, using personal pronouns and the definite article “ο, η, το” when the referent is already mentioned. As far as the comprehension questions are concerned, the child had difficulty in understanding some of the questions while when he could not find the Greek word he used its English equivalent.

As far as the narrative skills of the child in the two languages are concerned, the results revealed that the child had more difficulties in the complex stories in the two languages. However, his mistakes were limited as the child made some tense mistakes due to
his inability to form the past forms of the verbs. Chart 4 illustrates the child’s mistakes in the two languages while retelling both the simple and the complex stories. In general, it seems that the complexity of the stories affects the child’s oral production, with his performance in both the Greek and the English complex stories being characterized by grammatical mistakes that have to do with the child’s problems in using inflectional morphemes and in forming the past tense of irregular verbs correctly. This fact is expected in a way as the oral production of the dyslexic children develops slowly and it is usually characterized by problems in expressing their thoughts.

![Grammatical Mistakes in ENNI Stories](image)

**Chart 4: Mistakes in ENNI Stories**
CHAPTER FOUR
DISCUSSION OF RESULTS

Introduction

In this chapter, there will be a discussion of the results of the paper in relation to the theoretical background of dyslexia and the findings of other surveys. Moreover, due to the inconsistency between the clinical portrayal of the child and the research results, a deeper and more thorough analysis of the research findings will be provided.

4.1. Discussion

First of all, it is important to point out that there is no consistency between the clinical portrayal of the dyslexic child and the research findings of this paper. More specifically, the condition of the child is not so severe and he does not make many and very serious mistakes while reading, writing and narrating in both Greek and English. As far as the first research question and the first research hypothesis are taken into consideration, the research findings revealed that the dyslexic child made only a few mistakes in both languages. As far as reading is concerned, the mistakes of the child were mainly some omissions and additions of words, punctuation mistakes, substitution of visually similar words, pronunciation mistakes, suffix omissions and substitutions, problems in forming the past tense of the verbs and slow pace of reading. More specifically, the mistakes in reading the past tense of the verbs and the child’s tendency to omit the inflectional morphemes that indicate the tense were very common in both languages. Researchers (Hornsby, 1988; Polichroni et al., 2006) consider the aforementioned mistakes as characteristics and indications of dyslexia. Comparing the child’s performance in the two languages, the results revealed that his reading pace was a little better while reading the known text in English and there were no great differences in additions of words, omissions of words, additions of suffixes and omissions of suffixes in the two
languages. Moreover, the child did more substitutions of visually similar words that have the same meaning in Greek and he made more pronunciation mistakes in the unknown text in English. The child substituted words with visually similar that had different meaning in both languages but more in Greek, he made punctuation mistakes in both languages but more in the Greek unknown text, he did more suffix substitutions in Greek, he replaced the short forms with the complete forms in Greek as the Greek text had more short forms than the English one and he had more problems in reading correctly the tenses in English. This means that the child had difficulties in reading the inflectional morphemes of words, which can maybe be an indication of developmental delays in the stages of language acquisition. In addition, the child used to stress the words in Greek, wrongly.

As for writing, in Greek the child used punctuation only four times in a 19-line-text while in English he used no punctuation at all. Furthermore, he made more spelling mistakes in Greek, he had more examples of not leaving space between words in Greek and he confused acoustically similar letters in Greek. The dyslexic child showed no difference in confusing acoustically similar words in the two languages while in both languages instead of punctuation he used to link the sentences with linking words such as “and” in English and “κατ”, “μετά” in Greek. The child used to make more mistakes in stressing the words in Greek in his written assignment because in English there is no indication of stress in the writing system of the language. As a result, these findings come in concordance with researchers (Hornsby, 1988; Polichroni et al., 2006; Riddick et al., 2002; Stasinos, 1999) who point out that in writing, dyslexic learners make more spelling mistakes, they do not leave space while writing the words, they do not use punctuation, they mix capital and lowercase letters, they do not stress the words correctly and they use to skip or reverse letters or even words.
As far as the second research question and the second research hypothesis are concerned, narratives were used in order to examine the child’s working memory capacity and ability in story retelling and in comprehending what he is narrating in order to be able to answer the comprehension questions. Retellings have been used by researchers to gather not only oral language (Gazella & Stockman, 2003; Gillam & Carlile, 1997) but also written language samples (Kiewra, Mayer, Christensen, Kim, & Risch, 1991). Retellings are used to assess and evaluate students’ memory, reactions, writing, listening and reading comprehension (Harp, 2000). Researchers (Puranik, Lombardino, & Altmann, 2006; Vandewalle et al., 2012; Weaver, & Dickinson, 1979; Westerveld & Gillon, 2008) have revealed that dyslexics have more problems in story retelling than normal learners due to their working memory deficits. The narrative skills of children with dyslexia seem to be less developed in comparison to the typically developing (TD) peers. Research (Kibby et al. 2004; van der Schoot et al., 2000) has shown that the grammatical, syntactic, morphological, phonological and articulatory problems of dyslexics in story retelling are caused by nonlinguistic factors, namely by working memory deficits, which block the child’s attempt to reach higher order cognitive processes leading in this way in comprehension difficulties (Savage, Lavers & Pillay, 2007).

However, in the present study, the dyslexic learner showed no difficulty in story retelling, something which shows that he does not only have good working memory skills but he can also comprehend what he is narrating and answer the comprehension questions without difficulty. In general, it seems that the complexity of the stories affected the child’s oral production, with his performance in both the Greek and the English complex stories being characterized by grammatical mistakes that had to do with the child’s problems in using inflectional morphemes and in forming the past tense of irregular verbs correctly. This fact is expected in a way as the oral production of the dyslexic children develops slowly and
it is usually characterized by problems in expressing their thoughts. The child made no other mistakes such as wrong information addition or omission of basic information.

As for the third and the fourth research questions and the third and fourth research hypotheses, the performance of the child in reading, writing and story retelling in the two languages is similar. However, although the child usually makes different types of mistakes in the two languages, there is a tendency of the child to make more reading and writing mistakes in Greek than in English. Moreover, in this case, the transparency in the orthographic system of a language does not seem to affect the reading and spelling skills of the child who is better in English than in Greek. This finding comes into contrast to research (Landerl et al., 1997 for German; Pavlidis et al., 1997 for Greek; Wydell et al., 1993 for Japanese), which has shown that transparency in the orthographic system of a language affects the reading and spelling skills of people suffering from dyslexia. More specifically, we would expect the child to have more difficulties in English, which is a non-transparent language than in Greek, which is a transparent language and also his mother tongue. The one to one mapping of the printed symbols to the sounds of the Greek language and its swallow orthography in which there is almost always a direct grapheme to phoneme correspondence usually makes the reading and writing in this language easier than in English which has a deep, opaque orthography as it is a language in which more than one graphemes may correspond to one sound. Consequently, Greek dyslexics are expected to find reading and writing in their mother tongue easier than in English. In addition, according to the Linguistic Coding Deficit Hypothesis, we would expect the child to have the same strengths and weaknesses in the two languages. According to Ganschow and Sparks (1995) native language skills play a significant role in FLL success or failure because Foreign Language Learning is built on the person’s native language skills. As a result, developing an ability in a FL leads to progress in a similar skill in the person’s mother tongue and vice versa. However, in this case
the child’s performance in reading and writing seems to be better in the foreign language than in his mother tongue.

As far as the psycho-social characteristics of the child are concerned, according to his teachers, the child is very introverted, with some behavioral problems and he has difficulties in making friends and in conforming to the rules of the school. Furthermore, the child has a lot of anxiety while performing a task and he also confessed that he finds tests very demanding and stressful. After each session, the child seemed to be exhausted due to his intense attempt to fulfill the tasks. In addition, the child suffered from some coordination problems and he had also some problems in motor skills. All these characteristics conform to researchers (Polichroni, 2011; Riddick et al., 2002; Stasinos, 1999), who place them in the broad category of the features characterizing dyslexic learners.

However, there are no explanations that could account for the child’s poorer performance in Greek than in English, in some skills. The information taken from the teachers about the child’s performance and his background reveal no actual reason that could justify this result. The only explanation which could somehow explain this situation is maybe the fact that the mistakes the child makes in Greek are maybe developmental due to slower development of the stages of language acquisition.

However, the child’s unexpected better performance in English, in writing and in some aspects of reading, can be explained in order to clarify this inconsistency in the results and the clinical portrayal of the child as dyslexic. First of all, the dyslexic child of this study has been exposed to CLIL lessons for three years for 4, 4 and 2 hours per week, respectively. Over the last 15 years a new educational approach has been established and it is commonly referred to as Content and Language Integrated Learning, also known as CLIL. Bilingual education is popular nowadays and it includes different programs such as CLIL and immersion programs. CLIL is an umbrella term that includes a range of bilingual education
programs. In this dual-focused approach, content is learned through a foreign language and the main aim is teaching and learning both content and language. It is a form of bilingual education that gives the opportunity to the students to learn a foreign language by studying a subject and to learn a subject through a foreign language even for a limited part of the school curriculum (Mattheoudakis, Alexiou & Laskaridou, 2014).

Previous studies (Dalton-Puffer, 2008) have shown that CLIL has positive outcomes in language including gains in receptive skills, vocabulary, morphology, fluency, creativity and it promotes risk-taking and affective factors. In his study, Sylven (2004) has shown that more hours of exposure to this content-based approach offers greater vocabulary acquisition and communicative skills in the target language as opposed to less hours or no exposure at all. Being a form of bilingual education, CLIL is expected to provide linguistic, cognitive and metalinguistic benefits just like immersion programs (Cummins, 1984). In their study, Mattheoudakis et al. (2014) revealed language and content gains for CLIL learners as opposed to non-CLIL students. Moreover, research (Bialystok & Barac, 2011; Dalton-Puffer, 2008; Genesee, 1992; Munoa-Barredo, 2011; Sylven, 2004) has shown that exposure to CLIL and immersion programs, which is a form of bilingual education just like immersion programs, leads to an advantage for the CLIL children in tasks that require working memory and recall.

Furthermore, it has been shown that CLIL boosts the development of bilingualism (Coyle et al., 2010) and it has no impact on the first language (Genesee, 1987). CLIL, together with immersion programs is considered to improve executive control when there is increased experience to bilingual settings (Bialystok & Barac, 2011). As Bialystok (2001) has claimed, executive control develops earlier in bilinguals and Morales, Calvo and Bialystok (2013) showed a bilingual advantage on working memory tasks that demanded a combination of executive functions at the same time. Taking into account the studies on bilingualism that
found bilingual advantages on language development (Mattheoudakis et al., 2014), cognitive skills (Bialystok, 2009) and memory tasks that are based on executive functions (Bialystok, 2009), we form the assumption that being a form of bilingual education, CLIL has the same benefits in working memory tasks just like the benefits found in bilinguals. Bialystok, Craik, Klein and Viswanathan (2004), suggest that the bilingual advantage over monolinguals in executive functions and metalinguistic awareness can be attributed to the bilingual need to deal with two separate language systems, leading to higher levels of reading acquisition and academic achievement (Bialystok, 2004).

As for the present study, it is clear that the child’s exposure to CLIL, which is a form of bilingual education, offers many linguistic, cognitive and working memory advantages to the child. First of all, the child’s better performance in English than in Greek shows that CLIL has offered to him not only better linguistic development in the foreign language, which led the child to express himself easier in the FL than in his mother tongue in which he had difficulties finding the correct words, but also good working memory skills as these are illustrated in his excellent performance in narratives in both languages. More specifically, working memory, which stores and manipulates information temporarily, is used for everyday cognitive activities that require processing and storage (Alloway, 2006). It is one of the executive functions and it supports abilities such as reasoning, learning and comprehension. It also affects the child’s ability to learn and it is a predictor of learning outcomes. The bilingual advantage in executive functions leads also to an advantage in working memory which is one of its components (Bialystok, 2009). In their study on narrative production, bilingualism and working memory, Tsimpli et al. (2014) found that working memory correlates with L1 and L2 vocabulary skills with bilingual children who had high performance on working memory tasks having balanced knowledge between their two vocabularies as opposed to children with low performance on working memory tasks.
In general, each learner is different from one another, so their characteristics are unique and influence their learning. These unique characteristics are called individual differences and influence the learning of a second or foreign language. All learners and especially the young ones are unique and they have different cognitive styles, psychological traits and personality characteristics that influence the way they learn a foreign language. What is more, each learner has his/her own cognitive styles, such as intelligence, language aptitude, verbal ability, learning styles, which influence his/her learning ability. In addition to cognitive styles, the success of foreign language learning depends also on each learner’s psychological variables, including motivation, past learning experience, attitudes and orientation toward the target language and community as well as on his/her own personality characteristics such as inhibition, tolerance of ambiguity, anxiety, extroversion or introversion. This is what makes the difference between a successful and an unsuccessful language learner. Individual differences justify the deviations in skills and progress in language learning. The difference between the good and the poor language learner lies in the way they approach their language learning tasks because each of them has a different mechanism that helps him in the learning process.

More specifically, motivation is a significant factor which shapes the child’s linguistic and literacy development. For Gardner (1985, p. 147), motivation is “the effort, want (desire) and affect associated with learning a second language” and this desire to learn the foreign language comes from the goals that the learner wants to achieve and it is thus highly associated with the learner’s orientations towards learning while the affect includes his/her feelings towards learning. More specifically, during our encounter, the dyslexic child told me that he preferred English to Greek because for him English is easier and a more interesting language. Moreover, the child informed me that he usually watches videos and series in English at home while he likes reading English stories. In addition, his English teacher
confessed that despite some difficulties that he encounters in writing, the child is very willing to participate in class as opposed to his Greek teacher, who told me that the child did not participate at all during the lesson. As a result, motivation can be a very important factor that does not only differentiate the child’s performance in the two languages but also leads to literacy development and determines young learners’ success or failure. Depending on his interest in learning the foreign language, the young learners will be more or less motivated and then accordingly more or less successful in the foreign language. Their motivation to learn is determined by their attitudes toward the other linguistic and cultural group. And these attitudes derive from their reasons for learning another language.

These reasons depend on the individual’s personal goals and they have to do with the person’s orientation. More specifically, there are two kinds of orientations, namely the integrative and the instrumental. As Gardner and Lambert (1972, p. 132) point out, the integrative orientation reflects “a sincere and personal interest in the people and culture represented by the other group” that derives from the learner’s need to learn about a different culture. The foreign language learners “must be willing to identify with members of another ethno-linguistic group and to take on very subtle aspects of their behavior, including the distinctive style of speech and their language” if they want to be members of these people’s culture (Gardner & Lambert, 1972, p.135). So, it requires not only the acquisition of verbal habits but also the acquisition of behavioral ones. On the other hand, instrumental orientation is the “desire to gain social recognition or economic advantages through knowledge of a foreign language” and it thus reflects the more practical aspects of learning a language (Gardner & Lambert, 1972, p. 14).

According to Rubin and Thompson (1994), the reasons for learning a second or a foreign language might be professional when a person needs it in connection with a job, educational in order to satisfy an educational requirement imposed on him/her by school,
social so as to communicate with speakers of another language, or personal for personal enrichment. However, it is true that the more reasons learners have for studying a foreign language, the more motivated they will be. But the success in foreign language learning lies in the learner’s self-determination as he/she must set realistic goals so as not to be disappointed by the possible failure and abandon language learning. The knowledge of another language means getting a job, having a chance to be educated, to immigrate to another country, to expand one’s own cultural horizons and beliefs. It definitely affects their future, personal identity and life. Motivated learners show determination, persistence, and they are ready to expend a lot of effort for the realization of their goals.

In addition, the learner’s attitudes toward the target language, toward the target community and toward the learning situation itself, play a very significant role. Positive attitudes usually increase young learners' motivation and lead to success in foreign language learning while negative attitudes make them demotivated and lead them to unsuccessful learning. Therefore, “motivated students are usually those who participate actively in class, express interest in the subject matter, and study a great deal” (Lightbown & Spada, 2013, p. 88).

As far as the young learner’s personality traits are taken into consideration, they influence his/her success as a language learner. An extroverted person is supposed to be well suited to language learning because of his/her assertiveness and adventurousness (Rubin & Thomson, 1994). On the contrary, Rubin and Thomson (1994) point out that inhibition, shyness and introversion prevent the young learner from taking risks at learning and practicing because of the fear and anxiety of making mistakes, being misunderstood or even failing. In addition, a learner tolerant of ambiguity is supposed to be more successful, open-minded and flexible because he/she is willing to accept that uncertainty and inconsistency always exist (Rubin & Thomson, 1994). However, in this study, the teachers described the
child as introverted, with difficulties in socializing and making friends with the child confessing that he is very anxious while talking, reading, writing in Greek as opposed to English and with the English teacher saying that the child is very willing to participate in the lesson as opposed to Greek despite his fear of making mistakes. Other factors such as social and economic background, parent’s education and home literacy environment shape the person’s linguistic and literacy development as well.

In addition, another explanation for the child’s better performance in English than in Greek is the teaching of phonics. Phonics is a method of instruction that teaches students correspondences between graphemes in written language and phonemes in spoken language and how to use these correspondences to read and spell words. Several approaches have been used to teach phonics throughout the years. These approaches differ in several respects. Synthetic phonics programs use a part-to-whole approach that teaches children to convert graphemes into phonemes and to pronounce each letter in a word and then to blend the phonemes into a recognizable word. Analytic phonics programs use a whole-to-part approach that teach sound-letter mappings after whole word recognition takes place.

More specifically, in this study, the child was taught English phonics from a young age, namely from the second up to the third grade at school for 5 to 8 hours per week, respectively. During my visits to the school, I also encountered his teachers, who taught him phonics at that age. While we were talking, they both told me that initially the child had some problems in writing due to his hand coordination difficulties. Moreover, the teacher of the child that had taught him phonics in the second grade told me that from the beginning, the child had very good pronunciation, speaking and reading skills and he was very expressive in his reading with a very good intonation as well. She also confessed that the child comprehended what he was reading, he was very interested in the lesson and the next day he told the teacher songs and phrases in English that he had seen online in videos and he could
use them correctly in context. However, he had problems in writing due to his hand coordination difficulties that made him hesitant in fulfilling writing tasks. According to his teacher, the child was very talented and gifted from the beginning in English as opposed to Greek and this was what was weird for her. As a result, she pointed out that the child is not dyslexic with the conventional meaning of the term and that the fact that the child was introduced gradually to English without pressure to write and read immediately as opposed to Greek, might have helped him love English more.

In addition, the teacher that taught him phonics in the third grade, confessed that the child had no difficulties in reading, answering questions, speaking but he could not write what he had just told and when he had to do a writing task he usually delayed and he tried to avoid it. Moreover, his handwriting was illegible but he had shown progress. Both teachers agreed that CLIL as well as the experiential nature of the learning process in English have helped the child be more confident and better in this language. Furthermore, both teachers revealed that during the teaching of phonics, initially the main focus was on the oral production and discrimination of the sounds and this is why they did phonological awareness tasks such as syllable segmenting into phonemes, phoneme addition or substitution, blending, rhyming, and later on writing. Both teachers told me that phonics are helpful because the child can understand the grapheme-phoneme correspondence and develop his coding and decoding skills, a fact that leads to the child’s literacy development. However, if phonics were also taught for the Greek language, the child could have been better in Greek as well.

Reading abilities have a foundation in early speech perception (Molfese et al., 2002). As a result, the teaching of phonics helps the child understand the orthographic system of the language, in this case English, which is a non-transparent language, and the grapheme-phoneme correspondence, leading in this way to literacy development. More specifically, research (Foorman et al., 1997; Habib et al., 1999, 2002; Hatcher, Hulme, & Ellis, 1994;
Lovett et al., 1994; Olson, Wise, Ring, & Johnson, 1997; Santos, Joly-Pottuz, Habib, & Besson, 2006; Torgesen, Wagner, Rashotte, Alexander, & Conway, 1997; Torgesen et al., 2001; Wise & Olson, 1995) has shown that the reading, spelling and writing abilities of dyslexic students are better after intensive phonic training as opposed to their previous performance. In their research, Oakland, Black, Stanford, Nussbaum and Balise (1998) revealed that after a 2-year instruction to phonics, students displaying dyslexia demonstrated significantly higher reading recognition and comprehension compared with a control group, with the two groups not differing in spelling.

Teachers agree that difficulty with phonetic decoding is a hallmark characteristic of dyslexia. Consequently, phonological awareness tasks are very important as they help the child develop his phonological abilities by learning the grapheme-phoneme correspondences, be better in reading and writing and compensate for his/her phonological deficit. This is the reason why dyslexia remediation is heavily focused on phonics. Phonics lessons created for dyslexic people help them gain a greater understanding of the fundamental principles of English. The lessons should teach them to clearly distinguish all 44 sounds, while at the same time illustrate how the sounds match to the letters. Dyslexia often co-exists with an attention-deficit disorder, a condition that can interfere with reading performance and learning during instruction. As a result, the teaching of phonics which focuses on the specific sounds draw the learner’s attention and the learner is more aware of the different sounds that constitute a word.

To sum up, the child’s performance in the two languages does not agree with his clinical portrayal. The dyslexic child made only a few mistakes in reading, which are characteristics of dyslexia, in both languages such as some omissions and additions of words, punctuation mistakes, substitution of visually similar words, pronunciation mistakes, suffix omissions and substitutions, problems in forming the past tense of the verbs and slow pace of
reading. More specifically, while comparing the child’s performance in the two languages, in reading, the results revealed that his performance was better in English as far as reading pace, punctuation, substitution of visually similar words, suffix substitutions, short form replacement are concerned. No great differences were found in additions, omissions, additions of suffixes and omissions of suffixes in the two languages. On the other hand, in English he had more problems in reading correctly the tenses and in Greek, the child used to stress the words in Greek, wrongly.

As for writing, the child used linking words instead of punctuation in both languages and he had more problems in Greek, namely spelling mistakes, more examples of not leaving space between words, confusion between acoustically similar letters. The child used to make a lot of mistakes in stressing the words in Greek in his written assignment because in English there is no indication of stress in the writing system of the language. As for story retelling, the child had no serious difficulties but only some problems in the complex stories in both languages. However, his narrating and comprehension skills were very good while he made some grammatical mistakes due to his inability to form the correct tense of the verbs in both languages. All in all, the child’s better performance in English comes into contrast with what we know about the transparency of the orthographic system that makes reading easier. Being a non-transparent language, we would expect that the dyslexic child had more difficulties in English. However, the results are contradictory and this is what leads us to examine other parameters such as bilingual education (CLIL), motivation and attitudes, phonics instruction as possible reasons why the child shows this discrepancy. However, although we can explain the child’s good performance in English, we are not able to explain his poor performance in Greek. Due to this inconsistency we could assume that the child has good working memory and this is why his performance in the retelling tasks is good in both languages and that the
errors that he did may be some developmental mistakes that he makes while trying to develop his literacy skills.
Conclusion

As Moats and Dakin (2012) claim, dyslexia is a lifelong condition but early identification and treatment of this language difficulty is the key to helping dyslexic learners. Some of the basic signs that help the teacher identify dyslexia are the child’s difficulty in learning to speak, spell, read and write, in memorizing and comprehending (Moats & Dakin, 2012).

In this paper, I worked with one dyslexic learner and I compared his performance in reading, writing and story retelling in Greek, which is his mother tongue and in English which is his first L2. After the administration of several tasks in both English and in Greek, which aimed at comparing the performance of the dyslexic child in the two languages and at answering the research questions of the paper, the results were revealed.

At this point, it is important to clarify that there is no consistency between the clinical portrayal of the child as dyslexic and the research findings of this paper. More specifically, the condition of the child is not so severe and he does not make many and very serious mistakes while reading, writing and story retelling in both Greek and in English. The results revealed that apart from the expected mistakes that the child made in reading, writing and story retelling, his performance in English was better than in Greek. The child was more confident in reading, writing and story retelling when English was used as opposed to Greek. This finding comes into contrast with what we know that the transparency of a language makes reading easier. This is why several explanations were given to account for this situation such as the CLIL lessons that the child attended that gave rise to a bilingual background, the teaching of English phonics and the fact that the child was more motivated and interested in English. However, we cannot explain his poor performance in Greek as there are no signs that could account for this situation. The only explanation that we could give is that the errors that the child does in Greek are maybe developmental.
However, the results of this study cannot be generalized as there are certain implications. First and foremost, the sample was small since one child was tested. Then, this child’s motivation and interest for the English language made his performance in English better, something that made the results unexpected. The child’s performance in the two languages is not so different although there are some skills in which the child is better in English. Moreover, the anxiety of the child during the fulfillment of the third LAMDA-Test can partially justify his performance in this test and be the reason why these tests are not taken into consideration. In the future, a similar study should be carried out but with more children taking part.

Therefore, there are certain accommodations that will help not only the dyslexic child to learn but also the teacher to organize his/her lesson. Accommodations are alterations of the way tasks are presented, which allow children with learning disabilities to complete the same assignments as other students (Kormos & Smith, 2012). According to the idea of inclusive education, students with learning difficulties have the right to take advantage of the benefits offered by the school. The school’s duty is to offer accommodations and organize the educational process in a way that will facilitate the dyslexic learners as well. As Kormos and Smith (2012) describe, accommodations give dyslexic learners the opportunity to show what they know without being obstructed by their disability.

Dyslexics tend to learn through visual aids and hands-on experience. They have poor verbal short-term memory and they face phonological processing problems. In order to enhance dyslexic learners’ phonological memory and phonological processing abilities, which affect the acquisition of phonic skills, there is a need to enhance their phonological awareness skills through activities that contain phoneme deletion, phoneme completion, phoneme blending, phoneme isolation and manipulation, phoneme reversal and alliteration.
Furthermore, in the case of dyslexia explicit teaching is necessary as it should rely on conscious and intentional learning.

Some other possible accommodations which facilitate language learning are frequent breaks and more time in activities for learners with dyslexia (Kormos & Smith, 2012). Adjustments to the environment of the classroom are important with lights not being too light or too dark and temperature being tolerable (Kormos & Smith, 2012). Personal space is very significant as many children with dyslexia want their own workplace and they do not like sharing their table with their classmates. The classroom should not have noise and other distractions and the teacher can administer a test in a private room or in a small group (Kormos & Smith, 2012). While presenting the material, the teacher should provide an audio tape, large print, reduce the number of items per page or line and present the instructions orally first (Kormos & Smith, 2012). The teacher should allow verbal responses and permit responses to be given via computer or be recorded directly into the test booklet (Kormos & Smith, 2012).

As far as the activities are concerned, the teacher should organize them according to the learners’ interests and learning styles from the easiest to the most difficult ones. The material must not cause stress to the learner and it must not be overloaded with too much information. The font of the task should be large and easy to read, the spacing must be wider, the paper colored in pastel shades in order to make the activity more attractive and the instructions clear with no metaphorical language in it. Key points can be highlighted and the activities must be motivating and enjoyable. Furthermore, the teacher should use technological devices, interactive whiteboards, visual aids such as pictures, colorful images in activities and colorful markers in order to help the children make associations.

Moreover, the teacher should provide an outline of the lesson, a copy of the lecture notes and clear instructions so as the child not to be confused (Nijakowska et al., 2013). In
addition, the teacher should give explicit feedback to the learner presenting his/her errors and his/her strengths and establish a classroom routine that will be easy for the students to follow. The teacher should adopt motivational techniques such as offering a reward to the child after the completion of the activity and give credit for his/her effort. As Kormos and Smith (2012) state, the teacher should not make corrections with red pen only but use a variety of colors instead. Moreover, he/she should avoid gap-filling exercises unless choice of answers is given.
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APPENDICES

Appendix 1: Known Story for Reading in English

Retrieved from Mitchell (2008)

A. Do you remember what happened in this chapter? Choose from:

You have the right to remain silent, principal, president, leaves, trash,
that’s not fair, siren, keeping an eye on, bunch, online edition, waved,
come up with the idea, parading around, defenseless animals.

Dr. Carbles came running into the classroom. He was the (1) president of the Board of Education. He was the one who (2) came up with the idea of Career Day. He saw Mr. Klutz (3) parading around in his underpants and started shouting at him. Then, a (4) bunch of the teachers came running into the room complaining about the students’ stories. Dr. Carbles said he would shut the newspaper down and nobody would read that (5) trash. Ryan shouted (6) “that’s not fair”!

What about the freedom of the press? Mrs. Lilly said that people were already reading the (7) online edition because the Ella Mentry Sentry was on the Internet. Then, there was a (8) siren outside and the police arrived. They said: (9) ‘You have the right to remain silent’ to Mr. Klutz when they arrested him together with some of the other teachers. When Mr. Granite was finally about to start his math lesson, the bell rang and the kids went home. Just another normal day at the Ella Mentry School.

Created by Kassakogia Vasso
Appendix 2: Unknown Story for Reading in English

Retrieved from Mitchell (2008)

So the three sat down at the table, and wrote out near little notes—one to Barbara, one to George and one to Colin.

"Important! Please meet in the S.S. shed tomorrow morning at half-past two sharp."

"Seems funny not to send one to Jack," said Pam, as she licked her envelope. "I suppose we couldn't properly ask him to come?"

"No," said Peter. "He's probably got together another club now, and called it the Secret Seven."

"Well, I don't believe he has," said Pam. "I met him out the other day and he looked pretty miserable. He had that funny, skinny boy with him—what's his name now—Boupart?' Boopy, a really good name for him. He was talking at top speed, waving his arms about like anything, and old Jack wasn't saying a single word."

"That's his talk about Jack," said Peter. "Now—what's going to take those notes?"

"I will—on my way home," said Pam, putting up from the table. "And for goodness' sake, Peter, watch over your dear old Scamper. What the Secret Seven— I mean the Secret Six—would do without him, I really don't know!"

"Scamper would never, never go with any stranger," said Peter. "Would you, Scamper?"

"Wuff—wuff—wuff!" said Scamper, at once.

"He said 'Certainly won't,'" said Peter, and Pam looked at Scamper admiringly.

"He really talks," she said. "Well, I must be going. I won't forget to leave the notes. See you tomorrow at half past ten. Oh—same password as before—what was it now? If so long since we had the last meeting."

"Well—it's—er..." began Peter.

"Old King Cole," said Jane.

"Sausages," said Pam.

"No—Frog in the Pond," said Jane, knowing quite well it was not. 'Goodness—we're as bad as Jack.'"

"It was Toad-in-the-Hole, as you both know very
Appendix 3: Known Story for Reading in Greek

Retrieved from Iordanidou et al. (2013)
Appendix 4: Unknown Story for Reading in Greek

Retrieved from Iordanidou et al. (2013)
— Δε θα έρθουμε μαζί σου στις διακοπές. Θα πας μόνος σου σε σαν μεγάλης. Η μαμά σου κι εγώ αποφασίσαμε να πας σε μια κατασκήνωση. Θα σου κανεί πολύ καλό, θα είσαι με φίλους της πηγάδιας σου και θα το χαρέις πάρα πολύ...

— Σίγουρα, είναι η πρώτη φορά που θα μείνεις μόνος σου, χωρίς εμάς. Νικόλα, απόλύτως είναι για το καλό σου, είπε η μαμά. Λοιπόν, τι θας, αγόρι μου;

— Απίθανο! φύσας κι άρχισε να χοροπάθες στο σαλόνι. Γιατί απήχεις οι κατασκήνωσες είναι καταπληκτικές. Κάνεις ένα σωρό φίλους, ανείπωτες βόηθειες, παιδιά παιχνίδια, ανάβεις φωτεινός και χορεύεις και γιαγούνται. Ημές τόσο χαρούμενοι, που αγκάλιασας και φίλησε τον μπαμπά και τη μαμά.

Το βράδυ επέστρεψε άλλαν πολύ βόλα τη χαμόγελα, γιατί ο μπαμπάς κι η μαμά ούτε που τ’ αγκάλιασε. Εκείνο που είναι περίεργο είναι που ο μπαμπάς κι η μαμά με κοντάζει με μάτια γουρίλιμου και φαίνεται καταφαίνονται φαίνεται σπειροκαρπήσεις. Τους κατακτάβωνε, σίγουρα δεν έκαψε μια τούς αυτός τις διακοπές.

Ομοίως εγώ δεν είχα, απόλυτα πιστεύω πως ήμουν πολύ γειτονικός κι η θυγατέρα. Δεν ήμουνα;

Ρέντζι Γκισονί - Ζαν Ζακ Σαντέ, Οι διακοπές του μικρού Νικόλα, εκδ. Συγγραφείς Εκδότες, Αθήνα, 2000 (Διαθήκη).
Appendix 5: Writing in English

My favorite superhero is Batman because he is intelligent. He has very good armor and very safe gadgets that can help him. And his go the ability to fly and he has many vehicles.
Appendix 6: Writing in Greek
Appendix 7: ENNI Story (Simple Story in English)

Retrieved from Schneider et al. (2005)
Appendix 8: ENNI Story (Complex Story in English)

Retrieved from Schneider et al. (2005)
Appendix 9: ENNI Story (Simple Story in Greek)

Retrieved from Schneider et al. (2005)
Appendix 10: ENNI Story (Complex Story in Greek)

Retrieved from Schneider et al. (2005)
Appendix 11: LAMDA-Test (2012)
Appendix 12: LAMDA-Test (2013)

Αποτελέσματα ΛΑΜΔΑ
ΧΡΥΣΟΣΤΟΜΟΣ ΚΑΣΤΑΝΟΠΟΥΛΟΣ

16/5/2013

Άριθμος Νομικός
0 10 25 50 100

Τάχυτητα
0 10 25 50 100

Αδειώνοι
- Αδειώνοι κάνεις
- Αδειώνοι έδειχνες

Οδηγητικά
- Οδηγητικά
- Οδηγητικά γενικά
- Οδηγητικά γενικές

Ισχύς
- Ισχύς
- Ισχύς κοινώς
- Ισχύς μέσων

Ετήσιος Άνοιγμας
- Ετήσιος Άνοιγμας
- Ετήσιος Άνοιγμας κοινώς
- Ετήσιος Άνοιγμας μέσων

Μηχανισμοί Αδειώνοι
- Μηχανισμοί Αδειώνοι
- Μηχανισμοί Αδειώνοι κοινώς
- Μηχανισμοί Αδειώνοι μέσων

Μηχανισμοί Αδειώνοι
- Μηχανισμοί Αδειώνοι κοινώς
- Μηχανισμοί Αδειώνοι μέσων

Η θέση της σειράς συμπληρώσει αυξάνει τον εκατό τον εκατό τον εκατό τον εκατό τον εκατό τον εκατό τον εκατό τον εκατό τον εκατό
Appendix 13: LAMDA-Test (2016)