

**LEARNING DEFICITS- PHONOLOGICAL AND  
COMPREHENSIVE - ASSOCIATED WITH  
DYSLEXIA**

**Masoud NIATI**

**Master's Thesis  
Department of Foreign Languages Teaching  
Assist. Prof. Dr. M.Yavuz Konca**

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T.C.  
ATATÜRK ÜNİVERSİTESİ  
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YABANCI DİLLER EĞİTİMİ ANABİLİM DALI  
**İNGİLİZ DİLİ EĞİTİMİ BİLİM DALI**

(ÜNİVERSİTE ÖĞRENCİLERİNDE) FONOLOJİK VE  
ÖĞRENİM ZAAFLARININ DİSLEKSİ İLE İLİŞKİSİ

(Learning Deficits- Phonological And Comprehensive - Associated With  
Dyslexia)

YÜKSEK LİSANS TEZİ

**Masoud Niati**

Danışman: Yrd. Doç. Dr. M. Yavuz KONCA

**ERZURUM**  
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## KABUL VE ONAY TUTANAĞI

Yrd. Doç. Dr. M. Yavuz Kocacı danışmanlığında, Masoud Niati.....  
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Başkan : Yrd. Doç. Dr. M. Yavuz Kocacı İmza: 

Danışman : Yrd. Doç. Dr. M. Yavuz Kocacı İmza: 

Jüri Üyesi : Yrd. Doç. Dr. İ. Doğan Çiğdem İmza: 

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*M. Niati*  
İmza

**Masoud Niati**

## ÖZET

YÜKSEK LİSANS TEZİ

### (ÜNİVERSİTE ÖĞRENCİLERİNDE) FONOLOJİK VE ÖĞRENİM ZAAFLARININ DİSLEKSİ İLE İLİŞKİSİ

Masoud NIATI

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Bu çalışmada disleksik belirtilerin varlığı Bahçeşehir Üniversitesi'nde yeterlilik sınavına hazırlanan 18-21 yaşında olan öğrencilerin üzerinde t-test uygulamasıyla ölçüldü. Disleksi belirtilerinin olası olup olmadığı öğrencilere üç temel kavramdan oluşan testler uygulanarak hesaplandı. Bu testler, muğlak kelimeler, homofonlar, yarı-homofonlar, ve benzer kelimeler ile okuma anlama sorularından ibarettir. Bu deneysel çalışmada yer alan öğrenciler, farklı üniversite branşlardan 66 öğrencinin arasından seçilerek kontrol ve deney grubu olarak iki gruba ayrıldı ve böylece veriler toplanmaya hazırlandı. İki ön testle çözme ve kodlamaya dayanarak, disleksi olasılığı ölçüldü. Kekemelik özürlü bir öğrenci dışında hiç bir öğrencinin gelişimsel disleksiye maruz olmadığı ortaya çıktı. Bununla birlikte, bazı öğrencilerin başka özürleri vardı. Bağımsız değişken - emişli paradigma-, ile bağımlı değişken (cümle algısal değişmezlik) arasındaki ilişki kontrol ve toplam grup üzerinde korelasyon katsayısını kullanılarak kontrol edildi. Anlamları kafa karıştırıcı sayılan terimlerin kelime listesi verildikten ve bu liste öğrenciler tarafından incelendikten sonra, korelasyon katsayısı T-testi ile elde edildi ( $r=.308$ ). Ayrıca, bu çalışma bu bireylere uygulanan yöntemin ortografik ve anlama vurgusunu göstermektedir. Diğer taraftan, performans etkisi T-testi kullanılarak tespit edilmiştir. Sontestin ortalaması 14.87 iken fonolojik öntest ortalaması ise 11.12,  $r = .239$ . Yaşı 18-22 olan üniversite öğrencileri arasında deney grubunda genel olarak bu gelişimsel disleksinin başlıca belirtilerine rastlanmamıştır.

**Anahtar Kelimeler:** Disleksi, imla, homofon, anlama

## **ABSTRACT**

### **MASTER THESIS**

## **LEARNING DEFICITS- PHONOLOGICAL AND COMPREHENSIVE - ASSOCIATED WITH DYSLEXIA**

**Masoud NIATI**

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In this study, the probability of dyslexic symptoms existence through t-test and by a battery of test on EFL students with a range of 18-21, who were going to take the proficiency exam in Bahçeşehir University, was measured. This probability and whether dyslexia signs and symptoms are existent among students were calculated by giving them 3 basic tests including word-confusing words (homophones and semi-homophones, similar words), reading comprehension tests –those texts which have compound sentences with more than 3 verbs- and meaning in relation to taking tests of multiple-choice. During this experimental study, focus went on gathering data taken from a test-battery assigned to two groups of control and experimental group that randomly were chosen from 66 students from different university branches. After two pretests on decoding and encoding, the probability of dyslexia was measured and it turned out that except one student who had stuttering problems-none of the students suffered from developmental dyslexia. However, they had other drawbacks, which were measured by introducing a treatment based on priming paradigm, and then the effect of priming effect was measured through correlation measurements. The relationship between independent variable –here priming paradigm, teaching confusing terms- with dependent variable (perceptual constancy of sentences) was checked using coefficient correlation on sample means, which belonged to control and experimental groups based on the total groups variance and within-groups variance. After giving word list of confusing terms with their meaning and studied by Students, the Correlation coefficient achieved by T-test ( $r=.308$ ) showing a positive and moderate relationship between memorizing homophones and achieving on comprehension tests. Furthermore, all the treatments and tests which were handed over to individuals had a major emphasis on orthographic and comprehension-the two most seen signs in dyslexia. On the other hand, the performance effect was examined using paired T-test. In phonological pretest mean was 11.12, while the mean of posttest was 14.87,  $r=.239$ . Mean of pretest in syntactic field was 9.42, for the posttest, it was 15.15,  $r=.034$ . At least not last, the mean of pretest in semantic experiment was 10.21, for the posttest was 15.33,  $r=.143$ . Based on measuring correlation between pretest and posttest in phonological, syntactic and semantic experiments, a positive correlation was found between pretests and posttests,  $r=.239$ ,  $r=.034$  and  $r=.143$  respectively. In order to ensure that the findings are not related to chance or sampling error, a t-test was done between variables and tests. Between pretest and posttest of phonological experiment,  $t= 6$ ,  $p< .01$ . The same t-test was done two times more in other experiments of semantics and syntax,  $t=13.61$ ,  $p< .01$ ,  $t=11.08$ ,  $p< .01$  respectively. Overall, it was found out that the major symptoms of developmental dyslexia are not seen in experimental group among the university students with age 18-22 but other difficulties in accordance with semantics and syntax are existent which were improved by the application of priming paradigm and explicit instruction on phonological aspect.

**Key Words:** Dyslexia, orthography, homophones, Comprehension

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**Masoud Niati**

## CONTENTS

KABUL VE ONAY TUTANAĞI .....	i
TEZ ETİK VE BİLDİRİM SAYFASI .....	ii
ÖZET.....	iii
ABSTRACT .....	iii
ACKNOWLEDGMENT .....	v
LIST OF TABLES .....	xi
LIST OF FIGURES .....	xii

## CHAPTER ONE

<b>1. INTRODUCTION.....</b>	<b>1</b>
1.1. Research Problem.....	3
1.2. Research Goals.....	4
1.3. Research Importance .....	5
1.4. Hypothesis.....	6
1.5. Study Restrictions .....	7
1.6. Definitions & Abbreviations Used in the Study .....	7

## CHAPTER TWO

<b>2. LITERATURE REVIEW.....</b>	<b>9</b>
2.1. Reading Comprehension In Relation With Dyslexia.....	9
2.1.2. Dyslexia in Accordance With Socio-Reflection.....	11
2.1.3. Artificial Grammar Learning (AGL) Associated With Dyslexia .....	12
2.1.4. Developmental Dyslexics With Deficient Morphological Processing .....	14
2.1.5. Dyslexia in the Foreign Language Classroom.....	16
2.1.6. Signs of Dyslexia Among Older Individuals.....	18
2.1.7. Identification of Dyslexia .....	19

## CHAPTER THREE

<b>3. METHOD .....</b>	<b>21</b>
3.1. Research Type.....	22
3.2 Control and Experimental Groups .....	25



3.3. Procedures & Data Gathering .....	30
3.3.1. First Experimental Sessions In Accordance With Phonological Treatment .....	30
3.3.2. Second Experimental Session In Accordance With Syntactic Treatment ...	32
3.3.3. Third Experimental Sessions In Accordance With Semantic Treatment ....	34
3.4. Data Analysis .....	36

#### **CHAPTER FOUR**

<b>4. INFERENCES AND COMMENTS .....</b>	<b>40</b>
4.1. Findings .....	40
4.2. Comments .....	41

#### **CHAPTER FIVE**

5. Results and Suggestions .....	43
5.1. Results .....	43
5.2. Suggestions .....	44

<b>REFERENCES .....</b>	<b>46</b>
-------------------------	-----------

<b>APPENDIX .....</b>	<b>48</b>
-----------------------	-----------

Appendix 1 .....	48
------------------	----

Appendix 2 .....	49
------------------	----

Appendix 3 .....	50
------------------	----

<b>CURRICULUM VITAE .....</b>	<b>52</b>
-------------------------------	-----------

## LIST OF TABLES

Table 3.1. Experimental and Control Groups in Accordance With Pre-and Post-Test...	22
Table 3.2. Overall Results of Pre-Test In Terms of Phonological, Syntactic, And Semantic Aspects.....	27
Table 3.3. Pretest Results Upon Phonological Measurement In Terms of Explosive Consonants .....	28
Table 3.4. The Results Gained on Semantic Pretest and Posttest Scores .....	28
Table 3.5. 29 Paired Samples T-test Between Two Variables of Pretest and Posttest In the Span of Phonology, Semantics And Syntax Was Done Resulting In Following.....	29
Table 3.6. The Results of Correlation, Standard Deviation, Mean And T-Test of Experimental Group With Post-Test Results of Phonological Drawbacks .....	31
Table 3.7. The Summary of Data With Pre-Test and Post-Test Comparing Experimental Group Regarding Syntactic Drawbacks.....	33
Table 3.8. The Priming Paradigm Method Used as a Semantic Treatment Priming Condition and Confusing Wordlists .....	35
Table 3.9. Data Gathered From Comparisons of Two Pretest And Post-Test on Semantic Area Is Given Below in .....	35
Table 3.10. Semantic Questions in Pretest and Posttest .....	38
Table 3.11. The Questions in Syntax field Were of These Orders in .....	38
Table 4.1. 41 The Overall Results of Three Phonological, Sematic and Syntactic Achievement Tests .....	41

## LIST OF FIGURES

Figure 2.1. The Symbols Work Like Letters in the Study Done by Kowlton&Squire (1996).....	13
Figure 2.2. “Embedded Shapes”, by the Study by Potos (2004) Function as Stimuli in Which “G” Stands for Grammatical and “NG” for Not Grammatical.....	14
Figure 3.1. The Frequency of Male Individuals to Female Individuals In Both Groups Of Experimental And Control Groups .....	26
Figure 3.2. Binned Results of Pretest in Terms Of Phonological, Syntactic And Semantic Aspects, With A Density On 30-40 Scores. ....	27
Figure 3.3. The Results of Pretest at Three Spans of Phonological, Semantic And Syntactic Drawbacks .....	29
Figure 3.4. The Results of Posttests With 1 Standing for Male and 2 Standing For Female. ....	30
Figure 3.5. The Results of Pretest Scores on Phonological Drawbacks With Loess Line and Regression Line Dividing Scores Between The Lowest of 8 and the Highest of 13. ....	32
Figure 3.6. The Results of Post Scores on Phonological Drawbacks With Loess Line and Regression Line Dividing Scores Between the Lowest of 13 and the Highest of 16. ....	32
Figure 3.7. The Distribution of Scores on Pretest of Syntactic Drawbacks With the Lowest Score 5 to the highest 14. ....	33
Figure 3.8. The Distribution of Scores on Posttest of Syntactic Drawbacks With the Lowest Score 12 to the Highest 18.....	34
Figure 3.9. The Distribution of Scores on Pretest Done In Relation With Semantic Area With Regression Line=0.002 .....	35
Figure 3.10. The Distribution of Scores on Posttest Done in Relation With Semantic Area With Regression Line=0.022.....	36
Figure 5.1. The Scores of Control Group Ranging From 34 to 44 on X-axis.....	43
Figure 5.2. The Scores of Experimental Group Ranging From 45 to 77 on X-axis. ....	44

## CHAPTER ONE

### 1. INTRODUCTION

Researchers have been studying reading and spelling disorders for years. Teaching a second language for those who suffer from language disorders, in this study dyslexia, has been of importance for teachers recently. According to Critchley (1981), dyslexia relates to difficulty referring to the usage of words, their identification, and how dyslexics pronounce words. Developmental dyslexia, the most common type of dyslexia, is named as a difficulty with the written form of language which is independent of cultural, intellectual contributions, according to Thomson (1990), it is a characteristic of individuals' reading, writing and spelling skills which are below than the level of its normality. Recently, dyslexia has been labeled as inability to conceive reading passages when one has not a deficiency of IQ or neurological impairments. It should be mentioned without doubt that dyslexia relates directly to deficiency in reading and comprehension and the entire span that covers reading and comprehension of words. The major difficulties, which form the cornerstone of dyslexia, are poor decoding, slow analyzing on phonological level. Ganschow and Sparks (Ganschow et al., 1998) claim that native language effect in dyslexics learning a second language plays a great role; he offers the effect of first language on second language by translations causing some problems. The most important deficit is said to be the inability to separate the sounds of language and relate them to written symbols. It would be unilateral if the neurological impairment's role on reading disabilities is neglected. On the other hand, dyslexia is associated with problems found in memory, visual processing, auditory processing and attention. Although all these classifications of problems should be considered separately, dyslexics understand language totally and have a normal social awareness (E.M Photos & J.Kirk, 2004). The most obvious problem underlying dyslexia is found in reading and phonology. Another significant item which is associated with reading disabilities and there is a must for pondering over it is implicit learning, because that unconscious part of learning has a deficiency on this area. Furthermore, how can dyslexics develop implicit learning into explicit learning?

The quest here is not to find the origins of dyslexia but trying to answer how reading and comprehension can be affected in a negative manner. While thousands of people suffer from disability on conception of sentences, on its all levels (developmental dyslexia, surface dyslexia, autism etc.), this paper tries to shed more lights on the structure of dyslexia which can be found among university students learning a second language in this case English. In accordance with Kelly et al., implicit learning ability of dyslexia appears intact. If it is accepted that reading includes some cognitive abilities, then how other parts of human cognition is not impaired but those aspects related to reading malfunction. Vicari (2003) answers to this question “there is an implicit learning deficit for dyslexia”. In other words, implicit learning plays a major role in dyslexia analyzing since implicit learning is completely unconscious and unintentional, however those people who try to find the origins of dyslexia in neurobiology reject the idea of unconscious part of dyslexia and believe that dyslexia just relates to optometrists or other visual deficiencies. Therefore, it is clear to see that there are controversial conflicts among perspectives on dyslexia with regard to implicit learning and dyslexia. Considering other studies, neurobiological factors, the relationship of diverse orthographic problems with morphemes, phonological deficits, visual processing, auditory processing and educational and social barriers and not last but least teacher-pupil educational intervention can have their own impact on this field.

Other important study done by Stephen J. Macdonald (2009) focuses on sociological approach of dyslexia and institutional discrimination. In brief, he tries to analyze the development of a social model to understand dyslexia in terms of discrimination as a social barrier. The commonest factor is seen in all these studies is trying to find better ways to make dyslexics improve their meta-phonological awareness, rapid naming skills, and word-decoding skills. It is not necessary to declare that all these areas cannot be covered in this modest analysis but that part prevalent in understanding sentences from basic T-units to Compound clauses in terms of confusing words, pronunciation, the relationship of diverse orthographic problems with comprehension of passages in Second language. A very important part in studying dyslexia relates back to readers’ ability to analyze the meaning of morphemes which researchers (Singson, Mahony, & Mann, 2000; see Mann, 2000) call as “morphological awareness”.

### **1.1. Research Problem**

Teaching second language to those who suffer from language disabilities is necessary. Although there have been various methods in use for teaching a second language for dyslexics such as direct structured multisensory instruction (MSL), many schools and universities in developing countries are not aware of dyslexics' educational and social barriers they have to encounter. As an assumption, there is need to apply special programs to make a pathway for those who have weakness in second language learning and its usage. It has often been heard that many students and people have difficulty in reading and analyzing even in their own native language. When they read a text, from novels to scientific texts, they do not comprehend at first reading and have to re-read and again they are not able to catch up the meaning. This weakness causes many people with a standard IQ to leave the school at very young ages or university in the middle of semesters. Despite other social, economic problems, the main reason lies under the drawback and weakness on poor conception and they label the second language an obstacle that is hard to pass through. This problem gets worse on dyslexics and those who are not aware of their language deficits.

Answer to why many students leave university relates to varied stimulations. Many students who have passed the entrance exam have to study for one complete year to take the English proficiency exam in order to continue their study, but some of them see another language as an obstacle and most of them pass the exam. The problem is not language learning but how to learn it at age of 18 or 19. Texts crammed with hundred words in different areas carrying a general understanding of special academic fields like psychology or environmental problems can be considered as a real problem to students. When students read them with lots of unfamiliar words, unfamiliar structures, compound clauses and phrasal verbs with a complete different meaning from their original meaning, they get puzzled and it is too difficult to get even the general idea of a text. In spite to these, some students have difficulty in their own native language production and comprehension. Nevertheless, the most noticeable drawback of educational system is that university instructors are not aware of how many students have language disorders such as dyslexia and autism or have weak foundation for second language learning. All students from different branches ranging from social sciences and to engineering faculties get together and learn with a same method to pass

the proficiency exam classified into three major groups: A1-A2, B1-B2, and C1-C2. In fact, students with different intelligence strength (mathematical, emotional, literary and so on) consider texts from different perspectives; however, they get the same pack of learning. Regardless of their favorite branches, they have to take all these courses. Putting aside this conflict, the problem keeps going with those who have difficulty in conceiving words meaning, separating confusing words with similar orthographic pattern (drag, flag, loyal and royal etc.) getting the core meaning of passage, which is found in dyslexia as well.

Another important problem is that there are no sifting programs to recognize and identify those students who have real difficulty in understanding texts, unless they study it up to four times to catch up the general idea. Even it is sorrowful to say that many of them have to leave schools because they cannot understand texts, sometimes they are labeled as imbeciles by their counterparts or even by their instructors when they have the same IQ level like other successful students.

## **1.2. Research Goals**

This study tries to illustrate an exit way to obstacles encountered by possible dyslexic students who have to take language proficiency exam. The general purpose of this paper is identifying disabled and dyslexic students who are ignored by instructors at universities. In a categorical pattern, in this study, three significant goals have been of great focus:

- 1- The probability of existence of dyslexia among university students who have to pass the proficiency exam is the main goal of this study
- 2- Finding a way for recognizing students having language disorders in this case dyslexia among students of 18-19.
- 3- Making a possible pathway to improve language disabilities of students who are going to study original texts with minimum difficulty.

To fulfill the above-mentioned goals, some measures have been taken into consideration. The major hypothesis of this paper should be answered in terms of an independent variable, which are the results taken by teaching confusing-words and phonological rules, and a strong effect on these results or learning them (dependent

variable). In addition to this, the independent variable -direct method of explaining confused words- should predict scores on post-test scores.

Another goal that was supposed to be reached is a positive correlation between variable of pretest scores and post-test scores of confusing words and reading comprehension. Furthermore, does confusing –words knowledge and accuracy in grammar predict the awareness level of reading understanding? On the other hand, it is assumed that t-test results of two groups of experimental and control group should be large enough to attribute to the method used. Since the groups were not more than two then no analysis of variance was applied. For determining how many of students have difficulties in reading comprehension and phonological drawbacks, the probability of existence of dyslexia was considered by measuring the Z score.

Another sub-goal or it can be called a suggestion of this article is to obtain a better way for helping students overcome their weakness on conception of texts in two aspects of understanding and pronunciation. Totally, synthesizing an adequate educational instruction and providing socio-economic opportunities for those who have drawback in second language learning or dyslexics are the final purposes of this paper.

### **1.3. Research Importance**

Bilingualism as a significant and just helpful tool is considered by millions of people around the world for facilitating either their working conditions or studying original texts. Although for the majority of people learning another language cannot be as difficult as to linguistically disabled individuals, for those who suffer from language-related disorders like dyslexia either surface or developmental dyslexia, learning a second language can be burdensome and sometimes disappointing. Thus, this paper, in its whole span, tries to look at different angles of language disorders among university freshmen in terms of phonology and comprehension.

It is estimated that dyslexia affects between 5 and 17 percent of the population. When time comes to these 5 or 17 percent of population to learn a second language, their problem gets more dramatic because in most of modern and developing countries first, there are no measures to detect hidden dyslexics among people, secondly, there is no comprehensive method for educating either second language to dyslexics or even all



other university branches. Concisely, the importance of this study goes on detection of language learning disabilities and showing a pathway to individuals to overcome their language weaknesses by regarding three major aspects:

- 1-Phonological awareness, decoding
- 2- Orthographic coding
- 3- Recognizing confusing words

According to Macdonald (windows of reflection, 2009), “there has been a small movement in educational practice recognizing the limitations of the educational model and developing a more holistic social model approach”. In other terms, there are social barriers that prevent individual to be identified and given a practical method for overcoming the disabling barriers. Therefore, it is an appropriate time to figure out disabling barriers in SLA and try to find a better method to teach those who have language disabilities or weaknesses. Another purpose of this study is to find ways, if it is possible, for improving dyslexics’ comprehension level and their productive level by looking at the common weaknesses of individuals volunteering to pass proficiency exam. By a broad classification, speaking skills improvement method and reading skills improvement approach are in suit in this paper.

#### **1.4. Hypothesis**

In this paper, it is assumed that if learning disabilities on phonological, orthographic and conceptual spans are recognized among individuals learning a second or even foreign language, then there will be suggestions to solve, or at least find a better way to these barriers. This study has given its major focus on the role of learning homophones and confusing terms on one side, and the role of conceptualizing grammatical clauses for a better understanding and pronouncing either words or sentences in a passage. Here it is hypothesized that if individuals with language disabilities are given a direct method of recognizing words by an emphasis on letter-combinations that result in different meanings and various pronunciation and vice versa, thus, many of social barriers would be eradicated and they will be able to continue like other individuals. In other words, main emphasis is located on the relationship between orthographic elements and pronunciation. To clarify and give a precise recognition of

hypothesis, major theory of this study is if dyslexic symptoms are seen in native language, then they will also be seen in second or foreign language learning.

Technically speaking, the hypothesis will be proved if the coefficient correlation of learning confusing words and homophones with conceptualizing of texts in experimental group reaches a number very close to  $r=+1$ . As a in this theory, it is estimated that a range of symptoms (comprehension disorder and specific decoding) according to developmental dyslexia or simply specific dyslexia may be found among students preparing themselves for proficiency exam.

### **1.5. Study Restrictions**

It should be said that because of existence of some obstacles, this paper did not cover statistics relating to analysis of variance (Anova) and covariance. Anova was not calculated since there were just two groups of control and experimental , and there was not any accessibility to three groups or four groups, this is the answer why analysis of variance or analysis of covariance (Ancova) was not calculated in this study. In addition to this, due to the lack of enough accessibility to developmental dyslexics and surface dyslexics, the project was limited to a focus on individuals with a probable and recognizable learning disability in terms of phonology and comprehension.

On the other hand, many parents of real dyslexics did not allow the researcher to do his study on their children. Thus, these situations make the author do his research among university students who voluntarily accepted to take part in experimental and control groups sessions.

This study was done among Bahçeşehir university (located in Istanbul) students preparing themselves for proficiency exam for about 100 hours. Besides, the author did his examination in World of Language Academy (Wola) among 66 students all of whom were explained about the study before starting treatment and doing pretest or post-tests.

### **1.6. Definitions & Abbreviations Used in the Study**

For a better understanding of reader, some definitions of technical terminology used in area of dyslexia and their abbreviations have been given below:

Dyslexia: a commonly accepted description of dyslexia is the failure to learn to read, spell in spite of conventional instruction, culturally adequate base, and normal intelligence.

Dysgraphia: it is specific difficulty in terms of learning the graphic level of written language.

Disorthography: refers to spelling difficulties.

Encoding: calls disorder in in spelling

Decoding: can be labeled as a difficulty in learning to read or sometimes refer to dyslexia itself.

Proficiency exam: it is an exam refers to a set of exams checking out adequate and enough strength of individual who likes to study in any branch of university in which most lessons are offered in a second language.

SLA: is an abbreviation of second language acquisition

Coefficient correlation has been abbreviated by "r".

SLA: second language acquisition

SLD: specific language disability

PE: proficiency exam

AGL: artificial grammar learning

## CHAPTER TWO

### 2. LITERATURE REVIEW

#### 2.1. Reading Comprehension In Relation With Dyslexia

Accepted not as a disease but a specific language difficulty by most researchers on this field, dyslexia is characterized by problems in expressive or receptive skill. Most dyslexics are bright people who are not unfortunately identified by instructors or their parents (Robin L. Schwarz 1997). Below come some features that have been accepted by researchers to be found, a few or most of them, among dyslexics:

- Lack of awareness of sounds in words
- Difficulty in decoding words
- Difficulty in encoding words - spelling
- Poor sequencing of numbers or letters in words when read or written, e.g.:  
sing-sign; 12-21, flag-drag, worst-worth,
- Problems with reading comprehension
- Difficulty expressing thoughts in written form
- Delayed spoken language
- Imprecise or incomplete interpretation of language that is heard
- Difficulty in expressing thoughts orally
- Confusion about directions in space or time (right and left, up and down,  
months and days)
- Confusion about right or left handedness
- Difficulty with handwriting
- Difficulty in mathematics - often related to sequencing of steps or to the  
language of mathematics
- Similar problems among relatives

According to The\_International\_Dyslexia\_Association, it is estimated that between 15-20% of the people have some symptoms of dyslexia (at least some of above-mentioned features). Dyslexia can happen in people of all ethnicities, socio-

economic backgrounds and intellectual levels. Although number of males may be more than females, the condition appears to affect both genders equally. Based on studies by Joanna Nijakowska (dyslexia in foreign language classrooms, p14, 2010), dyslexia is classified into two major categories of “acquired and developmental disorders”. She suggests that acquired reading and spelling disorders come from brain damage resulting in total or partial loss of ability to read or spell. In a simpler definition given by Bogdanowicz (Bogdanowicz, 1989, 1999; Krasowicz, 1997), acquired dyslexia is in relation with reading and spelling disorders, which are caused by an injury to brain. However, developmental disorders specify slower rate of change in reading and spelling potential. Nijakowska (dyslexia in foreign language classrooms, 2010) continues that those children who suffer from reading and spelling disorders learn to read slowly than normal children. Most authors have divided developmental dyslexia into “specific and general disorders”, saying that while specific dyslexia refers to a limited number of skills general dyslexia covers the majority part of skills. Krasowicz (1997) offers another division of specific developmental reading disorder into “specific decoding disorder” and “specific comprehension disorder”. Tracking down these disorders-specific comprehension disorder- teachers of ESL students have also recognized that there are students who have great difficulty mastering English because of learning disabilities. In the UK, researchers call this specific difficulty as “specific learning difficulty”. Actually, IQ score that can be close to the average range (which most students have this score) depicts the diagnosis of specific learning difficulty.

Dyslexia is defined as a concept containing difficulty in reading and spelling (Borkowska, 1998, Petlewska, 1999; Zakrzewska, 1999). Bogdanowics (1989, 1999), gave a similar definition, *developmental dyslexia* refers to the syndrome of specific learning difficulties in reading and spelling showing a disorder in written communication. She classifies dyslexia in three separate notions: poor decoding or dyslexia, dysgraphia and dysorthograpghy. However, generally speaking, dyslexia is often accompanied by the adjective “developmental” that is internationally regarded as specific difficulties in reading and spelling (Critchley, 1964; Krasowicz, 1997; Ott, 1997; Reid, 1998).

On the other hand, educational science separates children with developmental dyslexia, as the special educational needs group. Children having dyslexia are not able

to recognize printed word at the level expected for their age. Broadly accepted, dyslexia is a life-long condition whose characteristics change during age and development. Like most definitions, the world Federation of Neurology in 1968 defined specific developmental dyslexia as a disorder in learning to read and writing in spite of the existence traditional instruction and having an adequate intelligence or socio-cultural opportunity. It is of importance to mention that Polish diagnosticians like Czajkowska and Herda divided reading and spelling errors traditionally into visual and auditory perception in 1999. However, dividing dyslexic errors into auditory and visual is questionable because this simple division can be very strict and problematic (Nijakowska). In spite of this strict division, it works as foundations for typology of dyslexia based on symptoms of reading and spelling patterns (Bakker et al.,1995).Border in 1973 proposed three types of dyslexia: *dysphonic*, *dysidetic*, and *mixed*. Furthermore, Bogdanowicz suggests the following types of dyslexia: visual, auditory and integrative (1997).

### **2.1.2. Dyslexia in Accordance With Socio-Reflection**

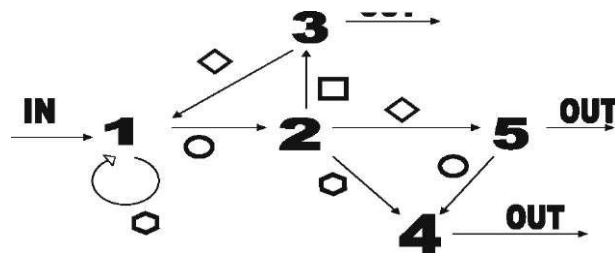
Conceptualizing dyslexia using the social model of disability is another level of dyslexia, which has been taken into consideration by many researchers in current century. Based on their hypothesis, poor socio-economic background accompanied by poor literacy environment can be another cause of reading problems, of course it is of importance to say that the lack of literacy has more effect on comprehension than decoding skills (Frith, 2008; Hulme & snowling, 2009). This literacy environment is a span of literacy-related activities, providing enough books for children to read, giving reading opportunities at home for children and parents' educational level. Stephen Macdonald in his article "Windows of Reflection" considers the effects of social barriers on learning disorders especially dyslexia. He tries to analyze the "life narratives" of the people with dyslexia. He also regards issues of social-class structures' impact on dyslexics. Macdonald mentions some social variables like social class, gender and ethnicity and their effects on people with dyslexia. He suggests that for a better understanding of disabling barriers it should be a focus on a social-class system and furthers by offering social-model approach. In addition to this, Riddick (2001) shows that disabling barriers have a significant role in restricting educational development and

consequently these barriers result in economic limitations for adults with dyslexia. Furthermore, it should be mentioned that dyslexia is jumped into life by institutional and environmental imposes (Macdonald, 2009). By a look at social model proposed by Riddick (2001), the medical explanation of dyslexia has not enough justifications for covering all causes for expanding dyslexia into societies. It is estimated that by using social model approach, understanding dyslexia would be clearer when social class and its effects within education and employment are considered. In his methodology, Macdonald (2009) hypothesizes that dyslexics' interpretations and experiences paly a great role in understanding the structures of social model of disability. After giving a quantitative questioner, he forms a non-probability sample to reach a qualitative biographical analysis. The findings by biographical data revealed that social class has no impact on dyslexics' disabilities; however, Macdonald's studies found that the most part of participants (61%) were of working-class. On the other hand, he concluded that all participants of his study had a common view of educational challenges and failures. According to findings by Macdonald (2009), when applying a social model analysis, the educational or conventional system behaves like "an institutional barrier" making discrimination for dyslexics. Moreover, he comes to this conclusion that in educational system, there should not be a standard linking intelligence with schooling success. Very interestingly, during his interviews with dyslexics, narratives collected by them declare the fact as labeling dyslexics as retards or sometimes as stupid people among their counterparts in schools (Barton & Oliver, 1997). The same results obtained by interviews done by BBC reporters. The similar studies (Suillivan, 2001) further that dyslexia has a little effect on getting qualifications among middle-class groups since middle class people succeed with a more probability because of their cultural backgrounds. Moreover, when the working-class group having very limited reading and writing skills abandoned school, they encountered finding employment (Macdonald, 2009). Thus, the educational experiences of dyslexics are in relation with their socio-economic backgrounds.

### **2.1.3. Artificial Grammar Learning (AGL) Associated With Dyslexia**

It is of significance to declare that artificial grammar learning used for finding the structure of learning in cognitive psychology for many years and one of its first

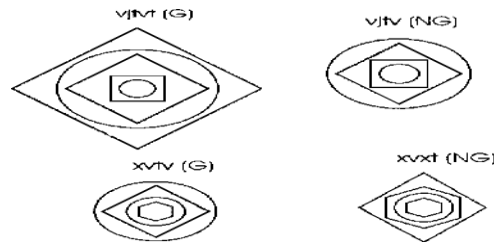
users was Miller in 1958. AGL is a kind of experimental paradigm examining a series of symbols used for learning. A finite state language provides these series. The finite state language tries to illustrate which sequences are grammatical and which of them are not. Artificial grammar learning or AGL used a task for classifying two kinds of learning task with a same complexity with its symbolic method differing in stimulus patterns by Emmanuel M. Potos and Jane Kirk in university of Edinburgh, UK in 2004. According to Potos (2004), “a dyslexia condition” is associated with problems found in memory, auditory processing, and attention. In AGL, he used two kinds of stimuli, one of which focused on encouraging participant to understand it as a whole like Gestalt psychology, and the other one related to elements of task separately. Potos & Jane Kirk (2004) found that dyslexics were not able to process individual stimulus elements like non-dyslexics. Miles & Potos (1993) report that dyslexics understand language in spite the language problems, also they are able to perceive the world by the same concepts like non-dyslexics. Potos (2004) suggests that the most obvious drawback seen among dyslexics is the deficit in reading and spelling. He like Critchley, (1964) and Krasowicz, 1997; Ott, 1997; Reid, 1998) wonders why just the reading competence is affected negatively while other cognitive processes will be intact. It is to say while other cognitive capacities work probably, the cognitive ability responsible for reading and spelling is paralyzed. For addressing the issue, Potos (2004) focuses on learning and attention and believes that sequence plays a vital role in understanding words. Figure 1 is an illustration of AGL used by Knowlton and Squire (1996) and by Potos (2004).



*Figure 2.1.* The Symbols Work Like Letters in the Study Done by Kowlton & Squire (1996).



It should be mentioned that Potos (2004) hypothesized that dyslexics have to process the two types of stimuli- elements and total sequence- as whole objects in the same way. Figure 2.2 indicates some “embedded shapes” with grammatical items. In this figure, grammatical items were recognized by “G” and ungrammatical one by “NG”.



*Figure 2.2.* “Embedded Shapes”, Study by Potos (2004), Function as Stimuli in Which “G” Stands for Grammatical and “NG” for Not Grammatical

The results obtained by Potos and Kirk (2004) clearly showed that dyslexics learn totally different from non-dyslexics in Artificial Grammar Task; however, based on their studies, the format of stimulus, separate elements or what is labeled as “Gestalt perceptive theory”, did not have any difference on AGL performance or in other terms, both the sequential elements and the embedded (Gestalt perceptive theory) stimuli had no effect on grammatical accuracy of participants. Last not least, Potos (2004) believes that the method of learning by dyslexics is mainly implicit.

#### **2.1.4. Developmental Dyslexics With Deficient Morphological Processing**

Adults who have developmental dyslexia suffer from difficulties in phonological processing (Adams, 1990; Stanovich, 1991; Vellutino, 1979). However, their intelligence is the same by non-dyslexics, which has been accepted by most researchers. According to Snowling (1981), developmental dyslexics have difficulty such as poor performance in non-word recognition and phonological awareness. Hence, widely accepted, the developmental dyslexia refers to the misuse of phonological symbols or letters and their recognition (Lyon, 1995; Mann, 1998; Morris *et al.*, 1998; Shankweiler *et al.*, 1995; Stanovich, 1989; Wagner & Torgesen, 1987). The relationship between morphological knowledge and reading disability has been of great importance

among linguists currently. One of the outstanding researches on the investigation of linguistic competence of dyslexics on its morphological level is the study done by Rachel Schiffand, Michal Raveh at School of Education and Haddad Center for Research in Dyslexia, Barman University in Israel published online in 2006 on Wiley InterScience.Schiff (2006) classifies dyslexia into three subtypes or subgroups:

- I. Phonological dyslexic subgroup
- II. Surface dyslexics subgroup
- III. Mixed dyslexic subgroup

Rachel Schiffand and Michal Raveh (2006) examined Hebrew dyslexics to find out if they extract and indicate morphemic units like non-dyslexics. They applied the priming paradigm in the word completion task and measured the “magnitude of morphological priming”. Rachel Schiff & Michal Raveh (2006) found that there is a comparable repetition priming effect among dyslectics in addition to this; they found that repetition-priming effects play a great role just for the first group that was Phonological dyslexic subgroup. For the knowledge of reader, priming is the implicit memory effect in which exposure to a stimulus influences response to a later stimulus. According to Rachel Schiff & Michal Raveh (2006), morphological awareness has a contribution to reading ability and is superior to phonological awareness. There has been an extensive contribution of morphology in reading especially in word recognition, which says that the “morphological structure” is one of the main structures of the mental lexicon (Deutsch & Frost, 2003; Feldman, 1995; Schreuder & Bayan, 1995). Based on Feldman (1994), the priming paradigm method that is the repetition of a target word two times one after another (beauty, beautiful, scan, and scanner) has been proved as an important method. The result of priming effect is increase of the speed and accuracy of target word (scan-scanner). That is to say, morphologically related words are in connection through orthography and phonology and meaning. Readers become sensitive to the morphological primes; it means that morphological primes have “facilitator effect” on readers’ attention (Rachel Schiff & Michal Raveh, 2006).

### **2.1.5. Dyslexia in the Foreign Language Classroom**

Based on Carrol in 1960s, there are individual differences in foreign language learning and symptoms change with time during the course of development among dyslexics. Some documents of cases collected by Dinklage show that these individuals achieved well at other courses but failing foreign language learning at Harvard University. According to Bogdanowicz (1989, 1997b, 1999), there is a coexistence of decoding and encoding problems in dyslexics. He furthers that and based on medical studies, reading and spelling disorders can be recognized apart from the “whole syndrome of specific difficulties” when learning to read and spell. Most importantly, as it was mentioned before, the developmental dyslexia is the most spread type of dyslexia. It is of great importance to declare that Dinklage was the first person for saying that the problems, which those students experienced, are similar to the problems faced by dyslexics. These difficulties were mainly on the field of reading and spelling, reversing of letters, confusion of words and deficits in verbal memory (Ganschow et al, 1998). Researchers in the 1980s proposed a relationship between foreign language learning difficulties and problems related to native language learning. In accordance with Sparks (1989), there are some common features which foreign language learners having specific learning difficulties share in learning a language. In 1987, Gajar made a comparison by Modern Language Aptitude Test (MLAT) between two groups of which one group had specific language learning disorder and the other group was a control group, and found that specific learning disabled students’ performance was very low than that of control group. This study indicated that students with foreign language difficulties had already experienced native language difficulties, which were not noticed before. In addition to this, developing the ability to decode in a second or foreign language triggers the same skill in a native language and vice versa (Nijakowska, 2007). It is suggested that those who suffer from foreign language learning have in common a disability in linguistic coding. Based on studies accepted by most of researchers on language learning difficulties, there are three kinds of linguistic coding deficits that are phonological, syntactic and semantic. Further to say, Skehan (1998) proposes that there is equality between second language learning and first language or native language learning. Again, Chodkiewicz (1986) emphasizes that those who have difficulty in reading in their native language may have to face trouble in learning foreign language.

It is of importance to mention that from the 1980s, Sparks et al. have played as a pioneering research in the field of foreign language learning deficits. They have classified the individuals as learning disabled or LD and low-achieving students. It seems that poor foreign language learners share the same disability in linguistic coding. By Sparks et al. (1980), Phonological and syntactic tasks are fundamental to language acquisition in its earliest stages. In 1991, Ganschow and Sparks gave the *linguistic coding deficits hypothesis* (LCDH) functioning as a model for describing the problems happening in language which learners of foreign language face. This model is its base located on the findings in native language and its research on reading disabilities proposed by Vellutino and Scanlon. Briefly, LCDH assumes that foreign language learning is about native language skills in a way that orthographic-phonologic, semantic fragments play their role in establishing the foundation for foreign language learning. The term “*linguistic coding deficits hypothesis*” was replaced by “linguistic coding differences hypothesis in 1994 by Lanchow. It is also supposed that both of native and foreign language learning rely on basic language learning mechanisms and the problems found in one language skill are probably to have a negative effect on both systems of native and foreign language systems. Furthermore, it is believed that the main part of poor foreign language learners experience the phonological or orthographic rules of second language (Nijakowska, 2007). According to Sparks’ findings in 1995, those students with obstructions in phonology of their native language would probably confront an immediate hurdle in foreign language learning. However, the native language difficulties of some learners may be overt or complicated and difficult to be recognized (Lanchow, 1995). Based on Ganschow and Sparks (1995), the problems of foreign language learning at secondary and post-secondary levels can be related to previous problems with phonological orthographic processing of their native language. It is assumed that these students can compensate in their native language in future but would likely have to face the difficulties with phonological and orthographic problems in a foreign language context (Lyoce, 2007). Furthermore, according to sparks (2006); there is no distinct or separate “entity” disability for foreign language learning or FLLD from other language disabilities. Considering the findings by Ganschow et al. (1994), it was turned out both students (LD) and poor FL learners without LD diagnosis differed rarely in terms of cognition and native language. Linguistically disabled students did not

always experience problems on foreign language learning and most of them passed FL courses easily. Noticeable is to know that LD students do not differ totally from non-LD low-achieving students if the severity of FL problems are taken into consideration (Nijakowska, 2007). In addition to this, Ferrari and Palladino (2007) found out that the similarity between LD and non-LD high-risk FL students. The answer can be found through the analysis of foreign language learning of high-risk students having phonological and syntactic abilities and semantic faculty (Nijakowska, 2007). The lack of scientifically proved criteria for identifying of language disabled has caused a great problem and brought about the forming of heterogeneous research sample of LD students (Sarks et al., 1995). This problem is seen in proficiency studies too. Focusing on Norwegian 12-year-old students with dyslexia, Kaasa and Halland (2005) found that the dyslexic group compared to non-dyslexic control group showed poorer results on an English proficiency test in terms of morphology, syntax, orthography and semantics. They also reached the conclusion those dyslexics showing first language deficits encountered more obstacles in learning the foreign language learning than non-dyslexics. By contrast, Miller-Guran and Lundberg (2002) challenged the supposition in which first language dyslexic reading problems are related to translation into second language learning. They coined the term “dyslexic preference for English reading” (DPER) and suppose that this problem can be related to several socio-cultural and emotional factors such as through second language input through television and music media, and exposure to second language literature. Van der Leij and Morfidi (2006) offer that even though phonological core deficit has the role of transferring reading difficulties from first language to second language, there is a possibility of existence of orthographic competence reflecting different perspective about mentioned problem.

#### **2.1.6. Signs of Dyslexia Among Older Individuals**

Across individuals the symptoms of dyslexia are seen along life (Downey et al., 2000; Gregg et al., 2005; Oren & Breznitz, 2005). Nevertheless, significant inter- and intra-individual variance makes dyslexia more complicated than it seems. It should be said that under the influence of education, and therapeutic activities, these signs can be changed or the situation can be alleviated. Signs of dyslexia, severe symptoms, are mainly reduced by increasing age; however, a slow rhythm of reading keeps continuing.

Moreover, types, intensity of reading errors are dependent on the orthographic rules of a given language and strategies used for reading. The two and most significant symptoms of dyslexia are accepted by most researchers as pronunciation and difficulty on acquiring of word decoding or simply reading. Based on Sezzerbinski' studies (2007), decoding and encoding are interrelated and are considered as "print processing aspect of reading and spelling". In adults, dyslexia symptoms are the deficits in decoding and speed of word recognition (Breznitz, 2003). It is assumed that inferring meaning through contextual path would empower some adult dyslexics to reach a high-standard reading comprehension. Lack of concentration is another symptom of developmental dyslexia which was reported by some of individuals. In addition, they report misarticulating multisyllabic words, mispronouncing names and surnames, committing spelling mistakes and avoiding reading.

Types of spelling mistakes, additions, deletions, reversals can be slightly decreased with age and by education (Nijakowska, 2007). As an example, vowel misreading takes place in English. However, choosing the appropriate spelling choice of sound would remain unchanged. This problem may be attributed to letter-sound mappings with an emphasis on vowels than consonants. According to Davis et al. (2007), Spanish dyslexics differ in terms of quantity and not in accordance with type of errors. 'trick instead of tick', 'walk for walking', 'sudly' for 'suddenly', 'rember' instead of remember, 'yoos' instead of use, 'wokt' for walked are some examples of dyslexic spelling. Sometimes, adults show weakness on distinguishing between letters of similar shapes. This disability is seen among 'a-o, m-n, l-t' letters; therefore, they make mistakes on writing 'moon' instead of 'noon'.

### **2.1.7. Identification of Dyslexia**

Based on researchers' methodology and diagnostic treatments, there are two major methods for identifying dyslexia, the first is general discrepancy and the second one is called exclusion criteria. For a more clarification, the discrepancy criteria relate significant incongruity between the poor achievement of a child in education, age and intelligence. On the other hand, the exclusionary is an indication of critical differences between dyslexic and other reading disordered individuals. It is of importance to notice that the discrepancy criterion tries to distinguish between general and specific learning

disorders. It refers to the difference between the actual reading ability and the expected level of intelligence (Joanna, Nijakowska, 2007). However, the exclusionary criterion shows that reading difficulties have their origins in low intellectual capacity, severe sensory impairment (Vellutino, 1979).

It has been accepted that reading and spelling difficulties involve the key signs in dyslexia; but most scholars in this area (Kasowicz-Kupis, 2008) have not distinguished a precise definition of the difficulties. It seems that clinicians conducting diagnosis about dyslexia encounter with the lack of definitional agreement of the disorder (Helland, 2007; Snowling, 2001). Due to existence of some common phonological deficits in varying languages, assessing of dyslexia in speakers of various languages can be very complicated. Identifying the cases of dyslexia among poor readers is not an easy task. In accordance with individuals' situations and dyslexia symptoms, there is a need for cooperation of a speech therapist, a laryngologist, an ophthalmologist, a psychiatrist, a pediatrician, and a neurologist to recognize symptoms of dyslexia among individuals (Wagner, et. al, 2005). Overall, target of assessing dyslexia can be in two forms, the classification of the disorder and recognizing the deficient functions in background of reading and spelling (Reid, 1998). Procedures related to assessment of dyslexia include interview, observation, analysis of writing, drawings, medical and educational documentation. It is also important to have a diagnostic look at the family and school environment to get a useful insight toward dyslexics (Joanna, Nijakowska, 2007). This assessment is followed by examining reading and spelling abilities in relation with accuracy, rate, and level of comprehension, which contain the necessary part of the diagnosis. According to Szzerbinski (2007), pseudo-word reading and spelling tests are the two most significant measures of decoding and encoding skills.

## CHAPTER THREE

### 3. METHOD

In this section, the working group, data collection, measurement tools, data analysis, and “Learning Difficulties in terms of phonological (encoding) and reading (decoding) were presented. In other words, an experimental method in order to measure the probability of existence of dyslexia symptoms in two widely known and accepted symptoms –reading and spelling has been used. The effect of spelling, confusing words training was calculated through performing a battery of tests among Bahcesehir university students. The method used here for determining the probability of dyslexia was a battery test involving phonological awareness, syntactic and semantic tests. For phonological awareness training, a developmental sequence was used which started from bigger chunks of words and then moved toward individual morphemes and phonemes. This treatment assumed that individuals would be able to hear and discriminate between sounds, identify them in different places in a morpheme (initial, final, medial) in order to do more rapid success in spelling and reading. Pure phonemic awareness treatment was of spoken words. Movable representations of sounds supposed to clarify, guide counting, segmenting and blending of words. The purpose of such training was to make the letter-to-sound relations. The goal of teaching phonics was to gain the knowledge that written words are built of letters representing the sounds of spoken words and to acquire those systematic relations between letters and sounds. For doing first treatment of decoding skill (phonology), 10 hours was consumed for experimental group. The second treatment was of training comprehensive skills because it was supposed that Skillful decoding would allow a shift of focus from recognition of letters and words to comprehension, which, in turn, leads to a critical assessment and creative use of the content of the text. Here it comes the comprehension step of reading texts or encoding phase of reading. This phase took 20 hours after doing pretest on semantic section. Finally, the last phase took place in order to train syntactic weaknesses common in individuals’ pretest.



### 3.1. Research Type

This study is a descriptive analysis-based work. In this study regarding second language acquisition and the possibility of dyslexia and its symptoms either phonologic or semantic among Bahcesehir university students, an experimental model, in other terms two groups of control and experimental, has been employed. A pretest-post-test equivalent groups design has been used to determine the effect of the treatment-as independent variable- and for finding the weaknesses and probability of dyslexia among individuals. These tests were achievement tests. A battery test of pre-test and post-test was used in order to determine the common elements of dyslexia and the effect of training by teaching confusing words and morpheme- orthographic relations. The test battery, which was applied here, is according to the Table 3.1.

Table 3.1.

*Experimental and Control Groups in Accordance With Pre-and Post-Test*

X	pretest	treatment (paradigm priming)	post-test
C	pretest	traditional method	post- test

X: stands for experimental group

C: is the abbreviation of control group

The test-battery applied here was classified into three main parts with emphasis on

- 1- Measures of Phonological disabilities
- 2- Assessing of syntax
- 3- Evaluating text comprehension

The phonological disabilities were measured on “explosive consonant graphemes” such as “G, K, D, T, B, and P”. Syntactic mistakes were taken into consideration in a range from excluding of “verbs, plural “S”, misusing of adjective instead of nouns to adding unnecessary “ing” to verbs. In addition, evaluating comprehension was done by asking students to write the general idea of a sentence. The problems, which were of great importance in this study, were analyzed and measured by doing statistical measurements based on experimentalism and descriptive analysis.

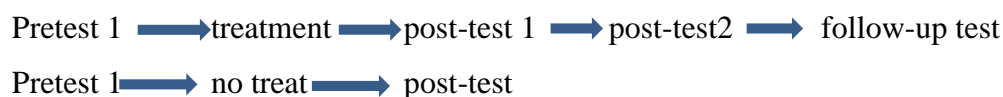
However, the method applied here was not that giving a specific treatment to poor readers or language disabled people, it tried to find two possibilities:

- 1- To determine the rate of probable existence of dyslexics among University students.
- 2- To distinguish the major weaknesses or disabilities in terms of phonology, semantics and syntax.

At least not last. This paper tried to give syntactic and semantic treatments to experimental group in order to measure its effects.

It should be said that this study was based on descriptive statistics since students wanted to pass the proficiency test. The effect of encoding and decoding of sentences on the span of dyslexia was measured through doing some static measurements. The question whether freshmen of Bahçeşehir University have any disorder related to dyslexia was asked in two broad manners: spelling and reading disabilities. In addition to this, the design used here tried to find or at least estimate the possibility and probability of dyslexia symptoms among the individuals of 18-20 years old by providing the experimental group a special treatment and using a traditional method for control group. Since there were two groups of experimental and control group, a bivariate statistic model was used to figure out relationships between different variables. Analysis of variance (Anova) was not applied because of lack of three or more groups. The independent variable of treatment and dependent variable of scores on post-test were taken into consideration for finding the relationship between experimental treatment and its effect on the group. Problem area went on three fields: short vowel sounds, initial and final consonant blends and digraphs and finally nasal sounds. In addition to this, a distinct treatment used for teaching confusing words (hire, hide, drag, drug, worst, worth). Through all the calculations, Excel and SPSS 19 version were used for finding standard deviations, coefficient correlation and providing bar graphs. A random selection method has been applied in order to avoid the sampling error and attributing the results to chance. For this reason and observing that the sample shows the elements of population, the distribution of individual scores and distribution of sample means of control group were calculated. In other terms, the population mean was calculated according to the confidence interval and the standard error of mean. To

get the results of experimental group, some activities for developing phonological awareness and awareness of sound-letter relations were applied. On the other hand, the study was a mixture of descriptive and experimental statistics emphasizing on real data relying on mathematical measurements for giving a valid evidence of hypothesis. In this study, the questions considered were those, which are related to disabilities or deficits in phonological, syntactic and semantic aspects and a battery of tests relating to measure these deficits were applied. For this reason, an experimental research with its focus on determining the rate of these deficits was used. Three separate tests on explosive consonants (G,K,B,P,etc.), sentence comprehension relating to “relative clauses, prepositional phrases, conjunctions” and semantic deficits in relation with confusing and homophonic words “royal, loyal, drag, flag, reason, result”, were examined to figure out the possibility and rate of dyslexia existence and other foreign language disabilities, in this case English. Moreover, for determining orthographic level of individuals, first, a pretest was done to extract their main deficits and based on these deficits; a direct method of treatment on spelling was applied in order to measure later the same deficits on posttests and follow-up test. It should be mentioned that a follow up test was done for figuring the stable effect of treatment and for testing the permanency of individual conceptualization. The other test used here was doing a paired test for determining the performance effect of treatment in experimental group. The reason for a pre-test measurement was to analyze those participants whose standard deviation was below their age-related norms. For a more comprehensive measurement of individuals’ ability on the above-mentioned span, the intervention took place. Moreover, for analyzing data, the students’ test results were transformed into T-score norms. To clarify, the possible teacher-dependent effects on the individuals’ performances were carried out using one-way analysis of variance with alpha error probability. The comparison to spelling performances prior to beginning of training and after treatment was tested. Along these, statistical regression tendencies were examined. For a better understanding and giving a general picture of this study, an overall silhouette is given below for experimental group, however, for control group; there was no treatment and intervention:

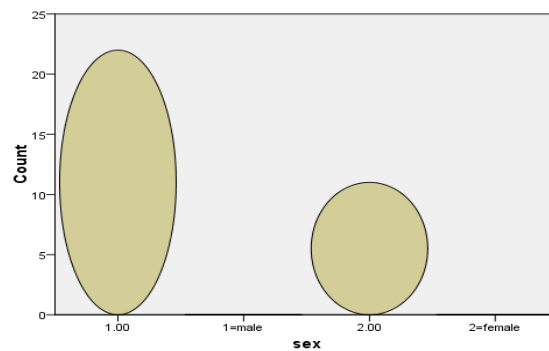


Training used here was problem-solving plans, verbal instructions for determining students' orthographic, semantic and syntactic competencies. In fact, research type focused on finding individuals' mental framework toward first language and its influence on second language acquisition. Further, to say, commonalities in dyslexia and non-dyslexia were taken into consideration by testing them through a bundle of tests. Because it is thought that by testing them repeatedly, some generalizable attributes would be extracted. This research is a combination of descriptive and experimental research. It is descriptive because it looks at what has taken place for students' second language learning, it is experimental since it manipulates the variables and decides who receives the treatment. The effectiveness of the direct method of teaching homogenous and confusing terminologies and syntactic structures was tested through two tests of pre- and post-test. Like a classic experimental research, this study has focused on finding the probability of dyslexia signs and symptoms among university students and the treatment used here assumed as independent variable. Therefore, for creating suitable patterns for producing speeches among dyslexia, some measurements were taken into consideration. The effect of environment-here the treatment- is measured by considering its results on post-tests. The treatment, as our categorical independent variable, used here was hemisphere-alluding stimulation.

### **3.2 Control and Experimental Groups**

Two groups of individuals preparing themselves for taking proficiency exam (66 students) from Bahçeşehir university freshmen with age between 18-21 were randomly selected in World of Language Academy (Wola-located in Istanbul) in 2011-2012. Each group contained 33 individuals- experimental group age mean and control group age mean were 19 years old ( $SD=.0/9$ ).both groups had no emotional disorders and suffered from no hearing or eyesight deficits. Both groups were registered in their regular English classes at the Wola institute. Prior to the introduction of training in experimental and control group, skills of individuals were evaluated by teacher on a 20-point scales, in which 10 showed the undesirable level and 20 showed excellency.to clarify, all the participants were selected randomly from different groups of studies

ranging from social sciences to engineering branches. Moreover, they were of an approximate same level of English language level with a mean 39 for experimental group (SD=2.79) and with a mean of 38 for control group (SD=7.19) except two of them who had studied French and German for one year at their primary and high school terms for one year. The mean of pretest on experimental group was 39.78 (n=33, SD=2.79). And one of them had the disability of stuttering, which is not at span of this paper, whose spelling training and measurement was excluded from this study but his syntactic and semantic measurement were considered. It should be said that the majority of participants were of male groups. The frequency of male to female students can be seen in figure 3.1:



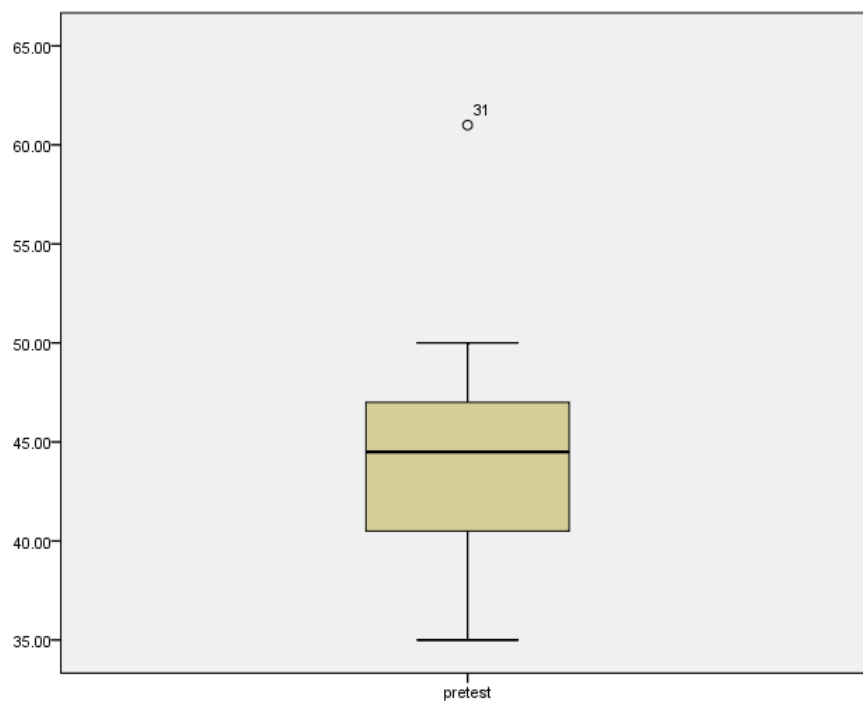
*Figure 3.1.* The Frequency of Male Individuals to Female Individuals In Both Groups Of Experimental And Control Groups

After informing them about the academic purpose of the study, they were divided into two groups of experimental and control groups each of which consisting 33 participants. However, this division took place after the first pretest with a hundred questions focusing on three major sections of phonology, semantics, and syntax. Furthermore, all the participants were about from same age from 18-21 mostly 20 years old. Besides to this, they all participated voluntarily in examination. In table 2 the results of pretest including three elements of phonology, syntax and semantics in both experimental and control group have been given:

Table 3.2.

*Overall Results of Pre-Test In Terms of Phonological, Syntactic, And Semantic Aspects.*

Groups	N	Mean	STD
Control	33	39.78	2.79
Experimental	33	38.63	7.19
Total	66	39.20	7.19



*Figure 3.2. Showing Binned Results of Pretest in Terms Of Phonological, Syntactic And Semantic Aspects, With A Density On 30-40 Scores.*

In Table 3.2 a close similarity is seen between two means of control and experimental group with means of 39 and 38 respectively and showing randomness. Spans of phonology, semantics and syntax were measured separately on both groups of experimental and control. Table 3 depicts the results of pretest on phonological aspect:

Table 3.3.

*Pretest Results Upon Phonological Measurement In Terms of Explosive Consonants*

Groups	N	Mean	STD
Control	33	11.24	1.54
Experimental	33	14.87	2.20
Total	66		

Another test was of syntax in which Out of 20 questions on syntactic in pretest, measures of mean = 9.42, SD=2.2 for experimental group and mean=9.72 and SD=1.6 for control group were calculated. After treatments given to experimental group, 20 separate questions including semantic areas were asked from two groups of experimental and control group as follows:

Table 3.4.

*Shows the Results Gained on Semantic Pretest and Posttest Scores*

Groups	N	Mean	STD	SED	r	sig.
Pretest	33	10.21	1.45	.25	.143	.428
Posttest	33	15.33	1.40			

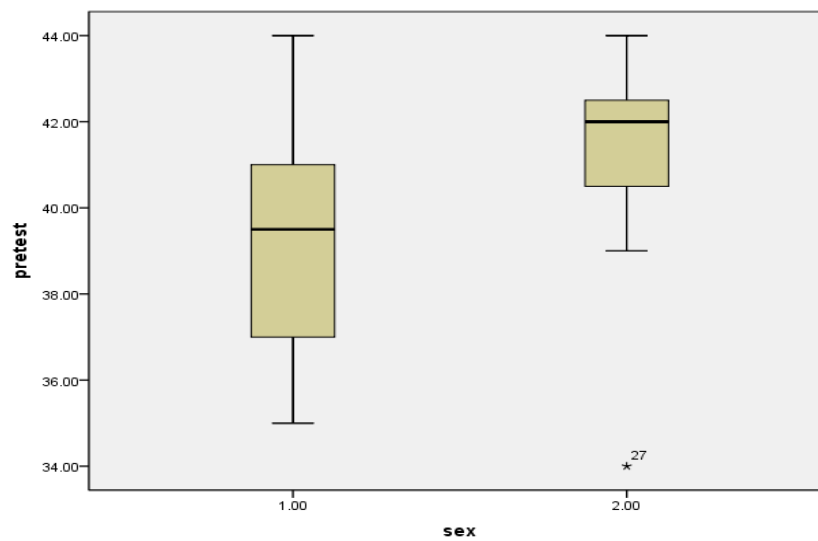
Experimental group was introduced to three kinds of treatment – explicit phonology, paradigm priming and clauses explanation, next a complete comparison was conducted regarding these three treatments. T-test, correlation and degree of freedom were measured. Table 3.5 gives a comparative of two pretest and posttest in experimental group.

Table 3.5.

*Paired Samples T-test Between Two Variables of Pretest and Posttest In the Span of Phonology, Semantics And Syntax Was Done Resulting In Following*

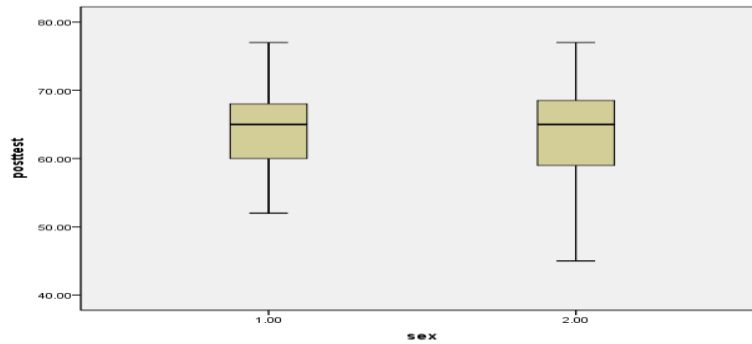
Tests	mean	SD	SEM	t	df	sig. (2-tailed)	r	n
Pretest	39.78	2.79	.486		32			33
Posttest	63.36	7.68	1.33		32			33
Pre & posttest	-23.57	8.95	1.55	15.13	32	.000	.308	33

Figure 3.3 & 3.4 compare pretest and posttest results in experimental group with 33 individuals with a look at entire phonological, semantic and syntactic drawbacks with lowest score of zero and highest score of 100:



*Figure 3.3. Shows The Results of Pretest at Three Spans of Phonological, Semantic And Syntactic Drawbacks*





*Figure 3.4.* Illustrates the Results of Posttests With 1 Standing for Male and 2 Standing For Female.

### 3.3. Procedures & Data Gathering

#### 3.3.1. First Experimental Sessions In Accordance With Phonological Treatment

After doing pretests and gathering information of phonological drawbacks on 66 students, who were randomly selected, 33 students were directed toward experimental treatment of phonological confusion for about 30 hours. This intervention took place 3 times a week, each week 10 hours on different days. The phonological treatment used here was that of direct method based on confusion of students on terms consisting rapid calling, quick pronunciation, reading aloud complex sentences involving relative clauses. Furthermore, after considering the data gathered from these drawbacks, the most common of them were analyzed carefully, and by a reference on common symptoms of dyslexia on decoding level (pronunciation), a specific treatment was prepared with a focus on commonalities in dyslexia. The treatment was applied here in order to make individuals recognize the differences found between words such as “quite, quiet, confuse, consume”. Time given for this treatment took 10 hours divided into three parts: first focus was on rapid naming of pictures shown to them boards, second focus was of quick pronunciation of long sentences involving relative and conjunctive sentences, and finally, the individuals were required to work out the differences between terms similar in shape (letter-sound correspondence) with orthographic aspect of learning. It should be mentioned that rapid calling and naming treatment took 10 hours, and recognizing homographic or semi-homographic words

treatment took 10 hours. After giving direct method of treatment on differences between homophones (aloud, allowed, sight, site) and training with a focus on correspondence between letters and their sounds in English, a posttest was done. The applied treatment here was a focus on grapheme-phoneme consistency. It was tried to improve the phonological awareness of individuals by giving them tasks covering:

- I. Homophones
- II. Grapheme-morpheme consistency
- III. Explosive consonant graphemes ( G,K, D, T, B, P)

Having finished the treatment, a break of 10 days was given to students in order to evaluate the permanent effect of treatment; individuals were asked to answer the posttest sheet with 20 questions in them. It is of importance to mention that the questions in this sheet were at the previous same level but with different words and different tasks. They had to do three tasks of rapid naming (calling) of pictures (all of them different in each sheet), then reading aloud longer sentences and recognizing homographic terms. After the training, the orthographic competency was assessed using standardized testing procedures. Data gathered from the posttest were put into analysis of finding the relationship between treatment as independent variable and scores on posttest as dependent variable, then the Pearson coefficient correlation measured ( $r = .239$ ) with standard deviation of ( $SD = 2.35$ ) for the experimental group (mean = 14.87,  $n = 33$ ); however, standard deviation of pretest was  $SD = 2.63$ , mean = 11.12,  $n = 33$ ), t-test was done for determining the level of significance at the level of  $\alpha = .05$  with a  $t = 6$  between pretest and posttest of phonological relation. Table 3.6 depicts the results of correlation, standard deviation, mean and t-test of experimental group with post-test results of phonological drawbacks:

*Table 3.6. Shows the Results of Correlation, Standard Deviation, Mean of Experimental Group With Post-Test Results of Phonological Drawbacks*

	R	SD	means	n	df	sig.
Pretest	.239	2.63	11.12	33	32	.180
Posttest		2.35	14.87	33		

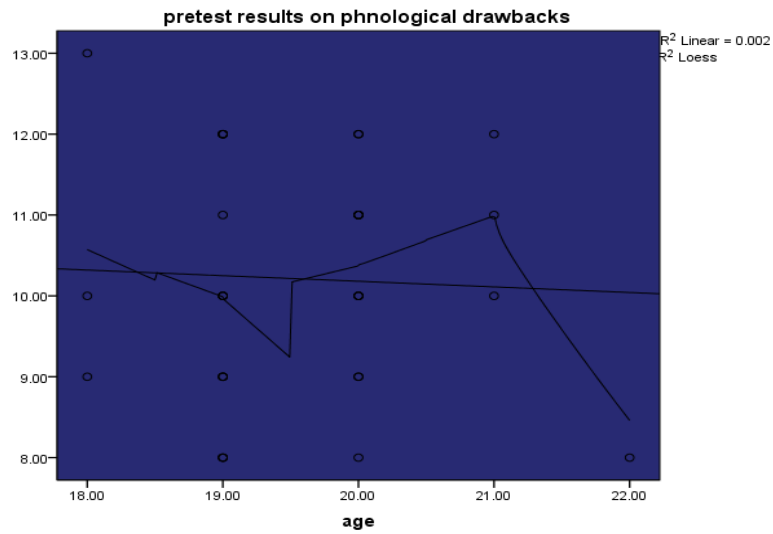


Figure 3.5. Shows the Results of Pretest Scores on Phonological Drawbacks With Loess Line and Regression Line Dividing Scores Between The Lowest of 8 and the Highest of 13.

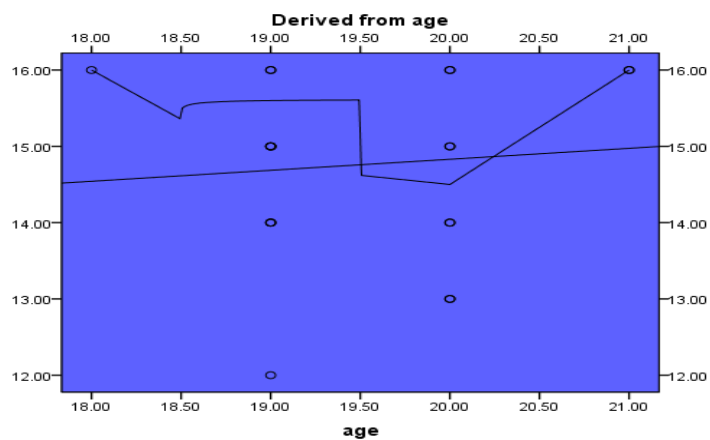


Figure 3.6. Shows The Results of Post Scores on Phonological Drawbacks With Loess Line and Regression Line Dividing Scores Between the Lowest of 13 and the Highest of 16.

### 3.3.2. Second Experimental Session In Accordance With Syntactic Treatment

Further to treatment, was about the focusing on grammatical fallacy found common among individuals. Based on data gathered from achievement test finding and

analyzing them, treatment related to syntax was that of points relating to mostly “relative clauses, quantifiers”. The treatment applied here was to instruct explicitly the function and usage of relative clauses and quantifiers. Furthermore, expressions that was of an obstacle for students to overcome were expressions and adverbials such as “*so do I? Neither do I? As far as*”, which were explained to individuals explicitly. These treatments took about 10 hours depicting the different usages of these two areas reporting data from post-test on syntax with  $SD=2$ , and  $SED=.34$  when compared with data from pre-test of syntax with  $SD=2.2$ , and  $SED=.38$  showed the coefficient correlation between two post-test and pre-test  $r=.034$ . Table 3.7 indicates the summary of data comparing two groups of control and experimental regarding syntactic points:

Table 3.7.

*The Summary of Data With Pre-Test and Post-Test Comparing Experimental Group Regarding Syntactic Drawbacks*

	Mean	SD	SED	N	r	sig	t	df	sig. (2-tailed)
Pretest	9.42	2.208	.384	33	.034	.849	11.08	32	.000
Post-test	15.15	2	.348	33					

A paired t-test done between two pretests and posttest in accordance with syntactic achievement is shown in two figures 3.7 and 3.8 below:

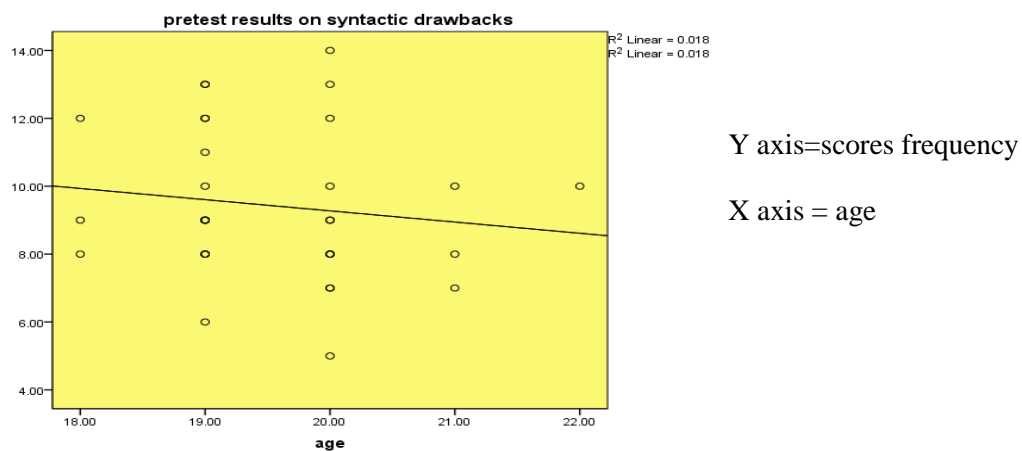


Figure 3.7. Shows the Distribution of Scores on Pretest of Syntactic Drawbacks With the Lowest Score 5 to the highest 14.

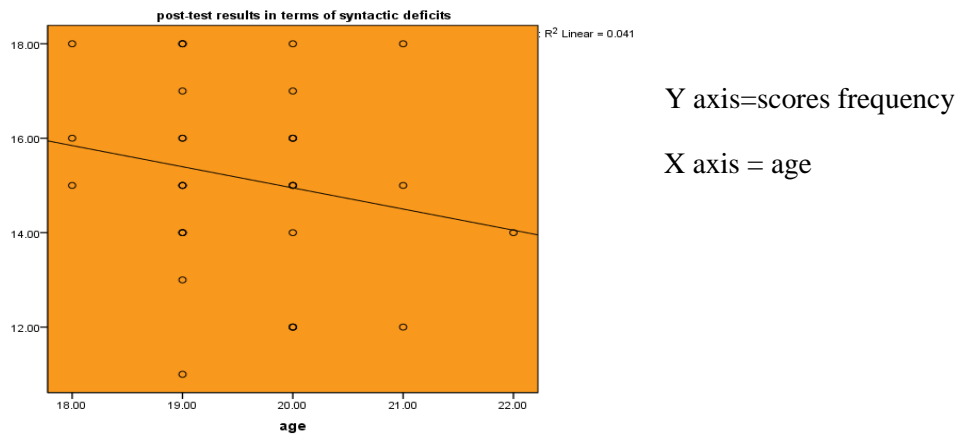


Figure 3.8. Shows the Distribution of Scores on Posttest of Syntactic Drawbacks With the Lowest Score 12 to the Highest 18.

### 3.3.3. Third Experimental Session In Accordance With Semantic Treatment

This section took place regarding lexical-semantic abilities in terms of *priming paradigm (scanner-scan)*, confusing words having same syllables but different in some consonants such as “*fight, flight*”, “*hitchhike, hijack*”, “*reason, result*”, “*royal, loyal*”, “*threat, treat*”, “*defendant, dependent*”, “*assessment, assistance*”. “*Abundance, abandon*”. Treatment used here was preparing a list of words after taking into account of pretest scores, and giving the definitions of these confusing words, which were about 200 hundred, took place in an explicit way by explaining their differences through examples in texts. This part took about 10 hours after pretest. Then, the use of suffixes, prefixes was given explicitly to students. A problem-solving plan, verbal instruction got into application for training experimental group. Table 3.8 is an example of treatment applied on semantic field using priming task, confusing words.

Table 3.8.

*Illustrates the Priming Paradigm Method Used as a Semantic Treatment Priming Condition and Confusing Wordlists*

Recognize	assessment	royal	threat
Recognition	assistance	loyal	treat
Recognizable	assistant	rival	throat

Table 3.9.

*Data Gathered From Comparisons of Two Pretest And Post-Test on Semantic Area Is Given Below in*

Tests	Mean	n	SD	SEM	r	sig.	t	df	sig. (2-tailed)
Pretest	10.21	33	1.45	.25				32	.000
Posttest	15.33	33	1.40	.24				32	
T-test	-5.12		2.16	.37	.143	.428	13.61		

Figures 3.9 and 3.10 show the differences between two pretest and posttest on semantic field of individuals and compare their scores distribution with a regression and Loess lines.

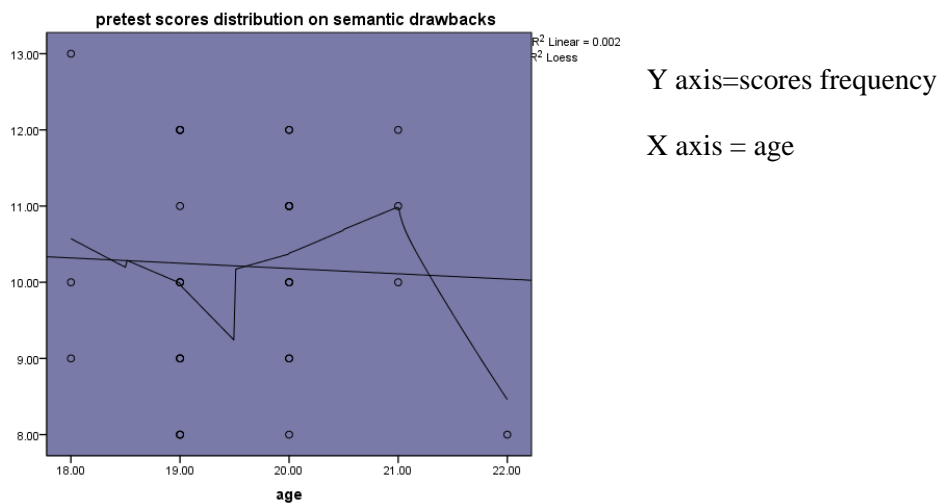


Figure 3.9. Shows the Distribution of Scores on Pretest Done In Relation With Semantic Area With Regression Line=0.002

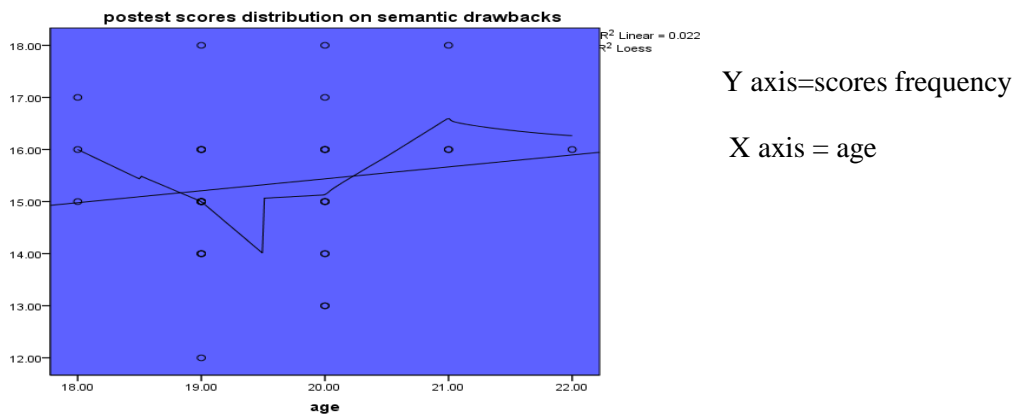


Figure 3.10. Shows The Distribution of Scores on Posttest Done in Relation With Semantic Area With Regression Line=0.022

### 3.4. Data Analysis

The study, as mentioned above, took place in WOLA academy in Istanbul in 2011-2012 with an official permission of its owner. The individuals (n=66) participated in the study were mostly from Bahçeşehir university preparing themselves for proficiency exam. To ensure that the extraneous treats would be eliminated, a random assignment was chosen in accordance with experimental and control groups. Descriptive research techniques with pretests and intervention training phase and then posttest were applied here with some differences, which are given in next lines. For determining the effect of orthographic competencies on dyslexia, lack of knowledge on confusing words, homophones and syntactic rules, a set of battery test and an explicit instruction were used. For developing semantic and syntactic competency, and phonological improvement, first technique was to prepare separate pretests for each of these three fields, afterward, based on the common fallacy among individuals, the treatment was applied to experimental group. Next was measuring the mean, standard deviations and standard error of the means in order to testify or perhaps reject the hypotheses of the paper. For proving the hypothesis or accepting the null hypothesis, a descriptive statistic method applied in two major areas, first, for determining the relationship either positive or negative between treatment and posttest and between two tests, coefficient correlation was taken into consideration, secondly, a t-test was used in order to reject or accept that difference between two sample means of pretest and

posttest. For showing that it is not related to sampling error or chance. Data gathering techniques were word-recognition tests (in either pretest or posttests), reading comprehension tests, and letter-sound correspondence. A set of standardized testing procedures was used. Treatment prepared was in relation with the most common drawbacks of individuals on phonology, semantics and syntax. After doing posttest, the performance effect was examined using paired t-tests by SPSS (trial version 19). Using tests including 100 questions divided into major parts of *grapheme-morpheme correspondence*, *confusing words*, *statements translation in texts*, *questions relating to relative clauses*, raw scores were obtained. Next, three pretests and their posttests were done separately for each of three parts: *phonological*, *semantic and syntactic competencies*. The obtained scores put into SPSS program to get diagrams related to frequency of scores in either pre or posttests. Afterward, the relationship between pretest and posttest was taken into consideration by coefficient correlation using standard deviations, means of pretests and posttests separately for each of mentioned categories. On phonological questions in pretest and post-test questions, the individuals' orthographic achievement was recorded in pretest and post-test regarding explosive consonant graphemes. These questions were 20 in number, 0 showing the lowest and 20 the highest. On data gathering and analysis, gender and age were just used for factors showing the frequencies. At the end of 6 week , both the experimental and control groups were given a test, Test scores gathered from two groups, then the average score of the individuals receiving experimental method compared to the pretests and to the average score of control group. Worksheets, questionnaires were two major data gathering ways in this study. The worksheets were of 20 questions regarding phonology, semantics and syntax. Checklist was used when observing students' doing the tests. The obtained data evaluated in terms of comprehension, making distinction among letters. On semantic questions, homophones, confusing words were asked from the students to determine their applications through texts. The dependent variables were test scores gathered from pretests and posttests. Intelligence and sex factors were not taken into consideration. The confounding factors such as fatigue, boredom, and excitement were eliminated by giving more time to the individuals to answer the questions.

The questions in semantic field were of these orders in Table 3.10.



Table 3.10.

*Shows Semantic Questions in Pretest and Posttest*

1	reference
2	distinction between confusing words such “royal, loyal”
3	inference
4	restatement
5	specific idea of a text

Table 3.11.

*The Questions in Syntax field Were of These Orders in*

1	subject-verb agreement
2	relative clauses
3	parts of speech
4	adverbials

The statistical measurements used here were for recognizing the possibility and probability of dyslexia symptoms among university students. For this purpose, a set of tests-pretests and posttests- with a regard to looking forward to the frequency of drawbacks and fallacy in second Language acquisition was done. These measurements included “mean, standard deviation of scores (SD), standard error of mean (SEM), variance of scores, coefficient correlation (r), paired t-test for comparing sample means (t)”. Standard scores were calculated in accordance with standard deviation units, it means that raw scores were converted to standard scores, for a better show of them, various graphs as above were used by SPSS (trial version 19). The standard score, which was used here, was T-score. Another technique used was the correlation of paired

variables (pretest and posttest here). In addition, the relationship between knowing homophones and structures with posttest scores was considered by the coefficient correlation ( $r$ ). The coefficient correlation was measured three times between three posttests and their previous pretests. In computing the mean of samples, the extreme scores were not taken into consideration. For testing the significance of the difference between means of pretests and posttest, three  $t$ - tests were measured. Having gathered raw scores from pretests and post-tests, the data processed through these mathematical measures for finding the rate of drawbacks and for determining the effect of explicit treatment applied in the study. When comparing the sample means of pretests and posttest, the mean of posttest in all of the three sections of study- phonology, semantics and syntax- were larger than those of pretests: in phonological pretest mean was 11.12, while the mean of posttest was 14.87,  $r=.239$  (Table 3.3). Mean of pretest in syntactic field was 9.42, for the posttest, it was 15.15,  $r=.034$  . At least not last, the mean of pretest in semantic experiment was 10.21, for the posttest was 15.33,  $r=.143$  (Table 3.6). Based on measuring correlation between pretest and posttest in phonological, syntactic and semantic experiments, a positive correlation was found between pretests and posttests,  $r=.239$ ,  $r=.034$  and  $r=.143$  respectively. In order to ensure that the findings are not related to chance or sampling error, a  $t$ -test was done between variables and tests. Between pretest and posttest of phonological experiment,  $t= 6$ ,  $p< .01$  showed rejection of null hypothesis or sample error. The same  $t$ -test was done two times more in other experiments of semantics and syntax,  $t=13.61$ ,  $p< .01$ ,  $t=11.08$ ,  $p< .01$  respectively. Again, statistical significance is seen between pretests and posttests in experimental study. The difference between the means was too great to attribute to sampling error or chance, the difference was considered to attribute to the treatment of the study.

## CHAPTER FOUR

### 4. INFERENCES AND COMMENTS

#### 4.1. Findings

The hypothesis of this paper was based on this statement: if dyslexia symptoms are seen in native language, then they will also be seen in second language learning as well. This problem first was observed by Dinklage at Harvard University documenting cases of students achieving well at other courses while failing their foreign language acquisition. For answering this question whether students- in this case Bahçeşehir University students- suffer from dyslexia or not, some pretests and posttest in relation with dyslexia were prepared and offered to them and an explicit instruction was applied to improve their disability. Decoding problem –difficulty in learning to read and spell, letter reversals and sound confusions and poor discrimination of sounds-, which are the cornerstones of dyslexia, were not seen in testing their ability in phonological tests before allocating them to experimental and control group. Table 3.3 shows that all the students have an average of 11.24 out of twenty on phonological test they took. To ensure that the results are not related to sampling error, posttest and according a t-test was measured and the finding below was achieved showing two major proves, first the participants do not suffer from major dyslexic symptoms, second, the treatment had a moderate positive influence on other language drawbacks: mean of phonological strength out of 20 questions in pretest was 11.24 for control group and 14.87 for experimental group,  $SD=1.54$ ,  $SD=2.20$  respectively. Another hypothesis claimed was that what the other leaning fallacies and weakness can be and act like an obstacle for university students whose native language is not English. Based on findings on pretests on three major fields of semantics, phonology and syntax, an explicit method giving feedback and explanation of confusing words, sound discrimination and syntactic clauses was applied for experimental group and it turned out that there was a positive correlation between treatment and posttests scores is clear to notice. Between pretest and posttest of phonological achievement test,  $r=.239$ , between pretest and posttest of syntactic achievement test  $r=.034$  and the last correlation between pretest and posttest was  $r=.143$  ( $r=\pm 1$ ). After these, t-test was done three times for showing the significance of statistical measures. The t-test of first pretest and posttest on phonological test was  $t=6$  showing that the difference between pretest and posttest cannot be related to sampling error or chance and the null hypothesis would be rejected at the level of .01. Therefore the treatment had a positive effect on

participants; another two t-tests measured were among pretests and posttests of semantic and syntactic achievement tests with  $t=13.61$ ,  $p<.01$  and  $t=11.08$ ,  $p<.01$  respectively, thus the difference between pre and posttests cannot be attributed to sampling or chance error and the null hypothesis would be rejected.  $p<.01$ . Paired samples t-test between two variables of pretest and posttest in three span of phonology, semantics and syntax was done resulting in as following Table 4.1.

Table 4.1.

*Shows the Overall Results of Three Phonological, Semantic and Syntactic Achievement Tests*

Tests	mean	SD	SEM	t	df	sig. (2-tailed)	r	n
Pretest	39.78	2.79	.486		32			33
Posttest	63.36	7.68	1.33		32			33
Pre & posttest	-23.57	8.95	1.55	15.13	32	.000	.308	33

#### 4.2. Comments

Although there was a moderate positive correlation between pretests and posttests in all three aspects, all of the data do not show that the individuals suffered from dyslexia since the main dyslexic symptoms which are difficulty in learning to read and spell, letter reversals and sound confusions and poor discrimination of sounds were not seen among the participant at the first pretest on all three above-discussed fields. On the other hand, there were some fallacies according to the results taken from these pretests and they were of mainly confusing words such as “royal, loyal”, “reason, result” which were of another level of difficulty that is not related to mere dyslexia, however, a design and a treatment were applied to reduce these obstacles to a lower degree. Therefore, after doing the treatment, the participant’s performance recovered moderately with a moderate positive correlation between variables. It is of importance to say that the participants’ deficits on phonological achievement test was under the influence of two basic factors, first, their native language background which is Turkish with its complete grapheme-morpheme correspondence that causes the learners-adults- with their analytic mind or mathematical rules- to adjust second language acquisition,

secondly, the lack of knowledge on how to pronounce in RP (received pronunciation). Therefore, it cannot be said that they suffer from dyslexia. The major finding of this paper goes on with deficits of individuals on syntactic and semantic rules, which again are not related to dyslexia, since after an explicit treatment, their performance improved and the statistical measurements above show their improvement either in semantic or syntactic areas. The method used here for was similar to that of study conducted in the field of teaching English as a foreign language to polish students with dyslexia done by Jedrzejowksa (2003). As he had used a pretest-posttest to observe advancement in relation with treatment, here this procedure was applied. He used multisensory method as his treatment, and claims that Polish learners experience great problems in learning the English phonological-orthographic system. In another study conducted by Michal Raveh and Rachel Schiff (2006), they applied priming paradigm (scanner-scan) for determining repetition priming effects on phonological and orthographic decoding skills, the same method used here but not for phonological skills improvement, the priming paradigm was used in this study in semantic skills on part of speech. They found out that repetition priming effects were of importance for the phonological dyslexia subgroup and not for the surface or mixed dyslexia subgroups; however, this study shows that priming paradigm-, which was part of semantic treatment-, plays a significant role in making the individuals' performance improvement.

## CHAPTER FIVE

### 5. Results and Suggestions

#### 5.1. Results

These findings suggest that the process for finding the dyslexic symptoms may need to consider two major field of learning in second language, first, decoding ( ability to pronounce), second, encoding ( reading ). For finding the probability of dyslexia and the related language drawbacks, a battery of test-in this case, pretests and posttest- are need to be applied by instructors. Although the best time for recognizing second language acquisition disorders is childhood, if they are neglected at this age, their effects can be seen in adulthood as well. If a child is slow on identifying letters, their sensitivity to letter patterns would be reduced at their either childhood or adulthood. By doing pretests at the first phase of this experiment, it was obvious that there was no trace of developmental or even surface dyslexic symptoms among individuals except one of them who suffered from stuttering when speaking but he did not suffer from letter-reversals or reading problems. . In this study, as it was mentioned above, three fields were taken into consideration according to dyslexia. The overall result of this paper comparing control and experimental groups on three fields of syntax, phonology and semantics is seen in Figures 5.1. & 5.2

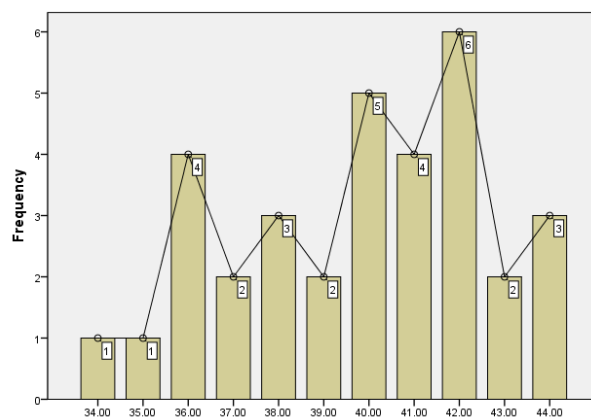


Figure 5.1. Shows the Scores of Control Group Ranging From 34 to 44 on X-axis.

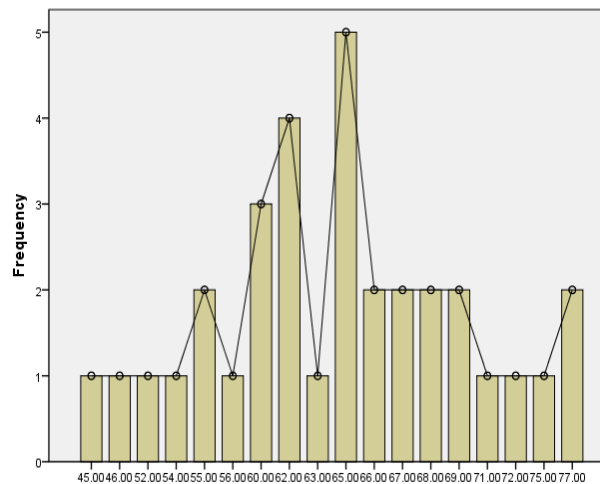


Figure 5.2. Shows the Scores of Experimental Group Ranging From 45 to 77 on X-axis.

Figure 5.1. shows that individuals in control group scored from 34 to 44 in achievement test in all three fields-phonological, semantics and syntax, however, figure 5.2 illustrates that the minimum score beginning from 45 and ends in 77. These results and with the above given tables and measurements that were conducted separately recognize a major difference between pretest and posttest of semantic skills and minor difference in two skills of phonological and syntactic skills. The most important method proved very helpful for the improving of participants' semantic skills was *priming paradigm*, in which a target word was repeated through its other parts of speech. A number of studies conducted by Deuthsch & Frost, 2003; Schreuder & Baayen 1995 reveal that morphological priming is a strong effect either to investigate the mental lexicon or to know how it affects the mind as a whole. Besides, to the effect of priming effect, learning confusing –words revealed a strong effect on manipulating achievement tests taken by individuals.

## 5.2. Suggestions

Using multivariate measurements in statistical part of research is suggested for students or other researchers who study numerous variables at the same time and have a desire to check and control multiple variables and their relation with each other. There may be a need to recognize those who may have real language disorders like dyslexia or dysgraphia before English courses for university students begin to be conducted by

teachers. After that, there should be some educational programs for developing their abilities in language acquisition.



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**APPENDIX****Appendix 1****Word list used in semantic part**

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1. drag	21.respect
2. Draw	22. rest
3. flight	23.assess
4. fight	24.assistance
5. reason	25.devisoin
6. result	26.diverse
7. low	27.inhabit
8. law	28.exihibit
9. exciting	29.abundance
10. existing	30.abandon
11. fry	31.comment
12. fly	32.commit
13. quite	33.experiment
14. quiet	34.experience
15. bear	
16. bare	
17. carry	
18. career	
19. simple	
20. sample	

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**Appendix 2****Wordlist used on phonological achievement test**

- |                     |                     |
|---------------------|---------------------|
| <b>1. treatment</b> | <b>12.conclude</b>  |
| <b>2. Threaten</b>  | <b>13. conceive</b> |
| <b>3. Convince</b>  | <b>14. deal</b>     |
| <b>4. Advice</b>    | <b>15. ideal</b>    |
| <b>5. suppose</b>   | <b>16.grow</b>      |
| <b>6. suggest</b>   | <b>17.grave</b>     |
| <b>7. shallow</b>   | <b>18.bit</b>       |
| <b>8. shall</b>     | <b>19.bite</b>      |
| <b>9. flew</b>      | <b>20.feel</b>      |
| <b>10. Flower</b>   | <b>21. fell</b>     |
| <b>11. mingle</b>   | <b>22.lose</b>      |
| <b>12. mugger</b>   | <b>23.loose</b>     |

## Appendix 3

## Sample Handwritings

At the present times, many people are going to university. Studying in university is the dream of everybody. Since there are several advantages of studying in university. One of the most significant advantages of studying in university is getting a good job with high salary. International companies employ those who are graduates from universities. Those people who like to be in good situation, go to universities. Also, if you can graduate from universities, you can obtain a certificate. Namely, after that you can work everywhere. The second advantage of studying in university is making various friends from different countries. Because in universities there are different people from various cultures and different countries, you can make new friends. In the light of the ideas, there are a lot of advantages of studying in university in terms of getting job salary, developing your social life and improving quality your life. Every people should go to university.

MY PARAGRAPH:

## Causes of pollution in Istanbul

Nowadays, pollution in Istanbul is increasing <sup>with time</sup> day by day. There are many reasons of pollution. The first and <sup>most</sup> important reason <sup>is</sup> that people are not conscious. <sup>To clarify,</sup> Istanbul <sup>is</sup> ~~polluted~~ <sup>polluted</sup> by some people.

Most of <sup>the</sup> people are ignorant. For example, ~~people~~ <sup>people who</sup> prefer smoking ~~to~~ <sup>to</sup> throw smoke ~~to~~ <sup>to</sup> outside. However, most people still continue ~~for~~ <sup>these</sup> behaviours. ~~Buts~~ ~~by~~ ~~people~~ ~~don't~~ ~~realize~~ ~~how~~ ~~bad~~ ~~it~~ ~~is~~.

~~is~~ ~~polluted~~. The second reason is a lot of firms and companies. Air and water pollution are triggered by many companies and firms. Therefore, natural sources <sup>are</sup> reduced by companies and firms. In

companies and firms produce many materials and employees have ~~staff~~ <sup>however,</sup> they damage natural sources and they continue doing this. The final reason is heavy traffic. Thousands of ~~of~~ ~~we~~ ~~are~~ ~~there~~ ~~are~~ ~~a~~ ~~lot~~ ~~of~~ ~~reason~~ ~~for~~ ~~air~~, ~~but~~ ~~using~~ ~~cars~~ ~~is~~

**MY RESUME**

**Address:** No: 18/1, Dost Sok., Maltepe, İstanbul

**Cell Phone No:** 0541 73 77 327

**APT. Phone:**

0216 427 44 95

**E-mail:** [masoud.niati@gmail.com](mailto:masoud.niati@gmail.com)

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## **Personal Information**

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Full Name:	Masoud Niati
Place of Birth:	Zengan, Iran
Date of Birth:	29/12/1978
Place of Living:	Istanbul

## **Education & Certificates**

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### **2010-2012**

M.A at English language teaching at Ataturk University

### **1998- 2002**

BA at English-Persian translation at Lahijan University

## **Experience**

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### **2005-2009**

Teaching TOEFL, IELTS at GII at Tehran

## **Computer knowledge**

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Office 2010, Windows 7,linux Ubuntu, R 2.5.2, SAS 9, SPSS 19,PHP,Windows Server 2007.