

**UNIVERSITI PUTRA MALAYSIA**

***PERCEPTION OF ENGLISH LEXICAL STRESS BY IRAQI ARABIC AND  
CHINESE MALAYSIAN ESL LEARNERS***

**HASAN SHABAN ALI**

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**By**

**HASAN SHABAN ALI**

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia,  
in Fulfilment of the Requirements for the Degree of Doctor of Philosophy**

**November 2017**

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## DEDICATION

This study is dedicated to the memory of my late father and brother who passed away and my beloved mother whose constant prayers helped me to complete this study. To my loving, understanding and supportive wife, Yazi Hussein Ali and my lovely sons, Ali, Atheer, Ibrahim, Anis and my beautiful daughters Warood, Shahad, Azhar and Iman.



Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment  
of the requirement for the degree of Doctor of Philosophy

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**November 2017**

**Chairman : Associate Professor Yap Ngee Thai, PhD**  
**Faculty : Modern Languages and Communication**

Lexical stress is argued to have a significant role in native speakers' perception and control of speech (Field, 2005; Cutler, 1984). Previous studies have shown that second language learners, particularly those from a non-stress language background, may not acquire the system of stress in the second language in the same way as native speakers do in the target language (Peperkamp and Dupoux, 2002, Archibald, 1997). As the realization of stress is a significant component of L2 acquisition, miscommunication can be the result of improper assignment of the lexical stress in the second language. The study aimed to investigate the influence of the L1 stress system on the acquisition of L2 stress at the word level. Two language groups of participants took part in a speech perception task: Iraqi Arabic and Chinese Malaysian ESL learners. The researcher adopted two models of lexical stress: the Stress Deafness Model (Peperkamp & Dupoux, 2002) and the Stress Typology Model (Altmann & Vogel, 2002). One hundred and sixty nine subjects were recruited for the study; the number of subjects in each proficiency level depended on their scores in the Oxford placement test. Specifically the study addresses the following questions i) Is there any language type effect on the overall performance mean scores in the perception of lexical stress? ii) Is there any language proficiency effect on the performance of both language groups in the perception of lexical stress? iii) What are the overall mean scores in the perception of lexical stress based on match/mismatch conditions? iv) Is there any word length effect on subjects' performance of each language group in the perception of lexical stress? v) What are the most difficult disyllabic and trisyllabic structures to be perceived by each language group? vi) Is there any word category effect on the performance of each language group in the perception of lexical stress? vii) Is there any stress position effect on the mean percentage scores of both language groups in the perception of lexical stress?

The speech perception task is a stress identification task. Participants listened to real as well as nonce words and identified the location of main stress in the stimuli. As Chinese is a tonal language (non-stress language), therefore, the stimulus items presented were selected and recorded based on assumptions about stress patterns in Iraqi Arabic. The items accessed in this task either matched or mismatched the expected stress computation in Arabic. If L1 influence was present, facilitation was expected for Iraqi Arabic and not Chinese Malaysian learners. The results showed that Iraqi Arabic participants did in fact perform better in the identification of lexical stress in English real words and nonce words when the stress pattern matched stress rules in Arabic compared to the mismatched condition. No facilitation was found for Chinese Malaysian learners whose performance was not significantly different between the matched and mismatched condition, and they performed relatively poorer compared to the Iraqi Arabic participants. Both language groups were more accurate at identifying final stress position in disyllabic than initial position, whereas in trisyllabic structures the Iraqi Arabic L2 learners showed a preference for penultimate stress position in contrast with the Chinese Malaysian group who had a preference for assigning stress to the final syllable of the word. It was also shown that the ability in perceiving lexical stress was influenced by syllable structure. The rank order of performance by both groups of subjects for different syllable structures was different. That is to say, syllable structures which are easily perceived by Iraqi Arabic group are difficult to be identified by the Chinese language group and vice versa. The findings are partially inconsistent with the predictions from the Stress Typology Model and the Stress Deafness Model. The results suggest that L2 learners from predictable stress language could perceive differences in L2 stress positions at the word level and they are not “stress deaf”. In sum, the study showed that there is evidence of first language influence in lexical stress assignment, but L2 lexical stress assignment rules can be learned as performance of the subjects improved with more exposure to the language.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

**PERSEPSI TEKANAN LEKSIKAL BAHASA INGGERIS OLEH PELAJAR  
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Tekanan leksikal dikatakan mempunyai peranan yang penting dalam persepsi dan kawalan percakapan penutur asli (Field, 2005; Cutler, 1984). Kajian terdahulu telah menunjukkan bahawa pelajar bahasa kedua, terutamanya mereka dari latar belakang bahasa bukan-tekanan, mungkin tidak memperoleh sistem tekanan dalam bahasa kedua dengan cara yang sama seperti penutur asli dalam bahasa sasaran (Peperkamp dan Dupoux, 2002, Archibald, 1997). Oleh kerana kesedaran tekanan adalah konstituen utama pemerolehan L2, kesalahan komunikasi mungkin hasil penempatan tekanan leksikal yang tidak betul dalam bahasa kedua. Kajian ini bertujuan untuk mengkaji pengaruh sistem tekanan L1 ke atas pemerolehan tekanan L2 di tahap perkataan. Dua kumpulan peserta bahasa mengambil bahagian di dalam tugas persepsi percakapan: pelajar ESL Arab Iraq dan Cina Malaysia. Penyelidik menggunakan pakai dua model tekanan leksikal: Model Pekak Tekanan (Peperkamp & Dupoux, 2002) dan Model Tipologi Tekanan (Altmann & Vogel, 2002). Seratus enam puluh sembilan subjek diambil untuk kajian ini; bilangan subjek di setiap peringkat penguasaan bergantung kepada markah mereka dalam ujian penempatan Oxford. Khususnya kajian ini membincangkan soalan-soalan berikut: i) Adakah terdapat sebarang kesan jenis bahasa pada skor min prestasi keseluruhan untuk persepsi tekanan leksikal? (ii) Adakah terdapat kesan kefahaman bahasa terhadap prestasi kedua-dua kumpulan bahasa untuk persepsi tekanan leksikal? (iii) Apakah skor min keseluruhan dalam persepsi tekanan leksikal berdasarkan struktur silabik sepadan/tidak sepadan? (iv) Adakah terdapat kesan panjangnya perkataan ke atas prestasi subjek setiap kumpulan bahasa untuk persepsi tekanan leksikal? (v) Apakah struktur dwisilabik dan tiga silabik yang paling sukar untuk dilihat oleh setiap kumpulan bahasa? (vi) Adakah terdapat sebarang kesan kategori perkataan terhadap prestasi setiap kumpulan bahasa dalam persepsi tekanan leksikal? (vii) Adakah terdapat sebarang kesan kedudukan tekanan ke atas skor peratusan min bagi kedua-dua kumpulan bahasa untuk persepsi tekanan leksikal?

Tugas persepsi percakapan adalah tugas pengenalan tekanan. Para peserta mendengar perkataan sebenar dan perkataan yang dicipta untuk satu ketika dan mengenal pasti lokasi tekanan utama dalam stimulus tersebut. Item stimulus yang dibentangkan dipilih dan direkodkan berdasarkan andaian tentang corak tekanan dalam Bahasa Arab Iraq. Item yang diakses dalam tugas ini sama ada padanan atau tidak padan dengan pengiraan tekanan yang dijangka dalam bahasa Arab. Jika pengaruh L1 hadir, pemudahan adalah dijangka untuk Arab Iraq dan bukan peserta Cina Malaysia. Hasilnya menunjukkan bahawa peserta Arab Iraq sebenarnya berprestasi lebih baik dari segi mengenal pasti tekanan leksikal dalam perkataan sebenar Bahasa Inggeris dan perkataan yang dicipta untuk satu ketika apabila pola tekanan sepadan dengan peraturan Bahasa Arab berbanding dengan keadaan yang tidak sepadan. Tiada pemudahan ditemui untuk pelajar Cina Malaysia yang mana prestasinya tidak jauh berbeza antara keadaan yang sepadan dan tidak sepadan, dan mereka berprestasi agak kurang baik berbanding dengan peserta Arab Iraq. Kedua-dua kumpulan bahasa lebih tepat mengenal pasti kedudukan tekanan akhir dalam kedudukan dwisilabik berbanding dengan kedudukan asal, sedangkan pada struktur tiga silabik pelajar L2 Arab Iraq menunjukkan kecenderungan untuk kedudukan tekanan kedua dari terakhir berlawanan dengan kumpulan Cina Malaysia yang mempunyai kecenderungan memberikan tekanan kepada suku kata terakhir perkataan itu. Juga ditunjukkan bahawa keupayaan melihat tekanan leksikal dipengaruhi oleh struktur suku kata. Urutan peringkat prestasi oleh kedua-dua kumpulan subjek untuk struktur suku kata yang berbeza adalah berbeza. Hasil kajian ini sebahagiannya tidak konsisten dengan Model Tipologi Tekanan dan Model Pekak Tekanan dan mencadangkan bahawa pelajar L2 bahasa tekanan yang boleh diramal boleh melihat perbezaan dalam kedudukan tekanan L2 di peringkat perkataan dan mereka tidak "pekak tekanan". Kesimpulannya, kajian menunjukkan bahawa ada bukti pengaruh bahasa pertama dalam penempatan tekanan leksikal, tetapi aturan penempatan tekanan L2 dapat dipelajari semakin prestasi subjek meningkat dengan lebih banyak pendedahan kepada bahasa berkenaan.

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I certify that a Thesis Examination Committee has met on 14 November 2017 to conduct the final examination of Hasan Shaban Ali on his thesis entitled "Perception of English Lexical Stress by Iraqi Arabic and Chinese Malaysian ESL Learners" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Doctor of Philosophy.

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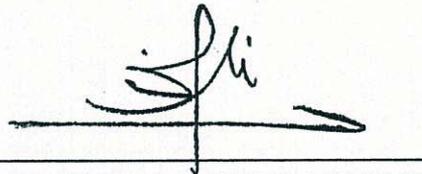
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## TABLE OF CONTENTS

	<b>Page</b>
<b>ABSTRACT</b>	i
<b>ABSTRAK</b>	iii
<b>ACKNOWLEDGEMENTS</b>	v
<b>APPROVAL</b>	vi
<b>DECLARATION</b>	viii
<b>LIST OF TABLES</b>	xiv
<b>LIST OF FIGURES</b>	xvii
<b>LIST OF ABBREVIATIONS</b>	xx
<b>CHAPTER</b>	
<b>1 INTRODUCTION</b>	<b>1</b>
1.1 Background of the Study	1
1.1 The Problem Statement	5
1.2 Objectives of the Study	9
1.3 Research Questions	9
1.4 The Theoretical Framework of the Study	10
1.5 Limitations and Scope of the Study	15
1.6 The Significance of the Study	16
1.7 Outline and Organization of the Study	17
1.8 Definition of Terms	18
<b>2 LITERATURE REVIEW</b>	<b>22</b>
2.1 Introduction	22
2.2 L2 Phonological Acquisition	22
2.3 Theories of L2 Phonological Acquisition	25
2.3.1 Perceptual Assimilation Model	25
2.3.2 Speech Learning Model (SLM)	26
2.3.3 Markedness Differential Hypothesis	27
2.4 Lexical Stress Models and Theories	27
2.4.1 Stress Deafness Model (SDM)	27
2.4.2 Stress Typology Model (STM)	28
2.4.3 The Motor Theory	29
2.5 Physiology of Stress Production and Perception	30
2.5.1 Perception of L2 Lexical Stress	31
2.5.2 Production of L2 Lexical Stress	32
2.5.3 Lexical Stress Perception and Production Relationship	33
2.6 L1 Interference	35
2.7 The Role of L2 Proficiency in L2 Stress	39
2.7.1 The Role of L2 Proficiency in L2 Stress Perception	40
2.7.2 The Role of L2 Proficiency in L2 Stress Production	41
2.8 Arabic Dialects Studies on Lexical Stress	42
2.9 Arabic Language within the Semitic Family	45
2.9.1 Stress Patterns in Classical Arabic	46
2.9.2 Word Stress in MSA Arabic	47

2.9.3	Arabic Prosodic Structure of Stress	48
2.9.4	Syllable Structure in Arabic	48
2.9.5	Arabic Dialects and the Phonological Dissimilarities	50
2.9.6	Baghdadi Arabic (BA)	51
2.10	Lexical Stress in English Phonology	52
2.10.1	Stress Patterns in English	54
2.10.2	English Stress vs. Arabic Stress	55
2.11	Mandarin Chinese	62
2.11.1	Chinese Word Stress	64
2.11.2	Intonation	65
2.11.3	Stress	66
2.11.4	Mandarin Chinese Tone and English Stress	67
2.11.5	Acoustic correlates of English stress	67
2.11.6	Acoustic Correlates of Mandarin Tone	68
2.11.7	Duration	70
2.11.8	Intensity	70
2.11.9	Stress in Mandarin Chinese	71
2.12	Summary	72
<b>3</b>	<b>METHODOLOGY</b>	<b>73</b>
3.1	Introduction	73
3.2	The Conceptual Framework of the Study	73
3.3	The Hypotheses	74
3.4	Research Design	74
3.5	Stimuli and Materials	75
3.5.1	Position of Stress	77
3.5.2	Word Length and Syllable Structure	77
3.6	Subjects	79
3.7	Location of the Study	80
3.8	Data Collection Methods and Instruments	80
3.8.1	Demographic Data	81
	3.8.1.1 Questionnaire	81
	3.8.1.2 Oxford Placement Test (OPT)	81
3.8.2	Non-demographic Data	81
	3.8.2.1 The Perception Experiment	81
3.9	Data Analysis Methods	82
3.10	The Pilot Study	83
3.10.1	Reliability of the Instruments	85
3.10.2	Validity of the Instruments	85
3.10.3	Conclusion	85
3.11	Summary	86
<b>4</b>	<b>RESULTS AND DISCUSSION</b>	<b>87</b>
4.1	Research Question One	87
4.1.1	Language Group Perception Results	87
4.1.2	Discussion	89
4.2	Research Question Two	89
4.2.1	Iraqi Arabic Proficiency Levels Results	90
4.2.2	Chinese Malaysian Proficiency Levels Results	91

4.2.3	Language Proficiency and Group Interaction	92
4.2.4	Discussion	94
4.3	Research Question Three	95
4.3.1	Word Category and Syllable Condition Interaction	95
4.3.2	Syllable Condition and Language Groups	98
4.3.3	Discussion	100
4.4	Research Question Four	100
4.4.1	Language Groups Accuracy Scores	101
	4.4.1.1 Iraqi Arabic language group	102
	4.4.1.2 Chinese Malaysian Language Group	104
4.4.2	Word Category and Word Length Interaction	105
4.4.3	Discussion	108
4.5	Research Question Five	109
4.5.1	The Rank Order in Disyllabic Structure	109
	4.5.1.1 Iraqi Arabic Error Rates	109
	4.5.1.2 Chinese Malaysian Error Rates	111
	4.5.1.3 Language Groups Error Rates	112
4.5.2	The Rank Order in Trisyllabic Structure	113
	4.5.2.1 Iraqi Arabic Error Rates	113
	4.5.2.2 Chinese Malaysian Error Rates	114
	4.5.2.3 Language Groups Error Rates	115
4.5.3	Discussion	116
4.6	Research Question Six	118
4.6.1	Iraqi Arabic Accuracy Scores	118
4.6.2	Chinese Malaysian Accuracy Scores	119
4.6.3	Both Language Groups Performance	120
4.6.4	Discussion	122
4.7	Research Question Seven	123
4.7.1	Stress Position in Disyllabic Structures	123
	4.7.1.1 Iraqi Arabic Accuracy Scores	123
	4.7.1.2 Chinese Malaysian Accuracy Scores	124
	4.7.1.3 Language Groups Accuracy Scores	125
4.7.2	Stress Position in Trisyllabic Structure	126
	4.7.2.1 Iraqi Arabic Accuracy Scores	126
	4.7.2.2 Chinese Malaysian Accuracy Scores	127
	4.7.2.3 Language Groups Accuracy Scores	129
4.7.3	Discussion	131
<b>5</b>	<b>CONCLUSION</b>	<b>133</b>
5.1	Introduction	133
5.2	Summary of Findings	133
5.3	Discussion and Conclusion	137
5.4	Implications	139
	5.4.1 Theoretical Implications	139
	5.4.2 Implications for Teaching and learning	140
5.5	Recommendation and Suggestions for Future Research	141
5.6	Contribution of the Study	142

<b>REFERENCES</b>	144
<b>APPENDICES</b>	162
<b>BIODATA OF STUDENT</b>	172
<b>LIST OF PUBLICATIONS</b>	173



## LIST OF TABLES

<b>Table</b>	<b>Page</b>
2.1 Possible Syllable Structures in Iraqi Arabic Adapted from Hassan (1981), Galip (1984)	59
2.2 Syllable Structures in Classical Arabic Adapted from Al-Ani and May (1978); Hassan (1981)	59
2.3 Syllable Structure in RP English Adapted from Singh & Singh (1979), Abdul- Halim (1996)	60
2.4 Primary Stress on 1st Syllable	61
2.5 Primary Stress on 2nd Syllables	61
2.6 Primary Stress on the 1st Syllable	61
2.7 Primary Stress on the 2nd and 3rd Syllable	62
2.8 Mandarin Tones and Notations (adopted from Jin, 1996:20)	63
2.9 F0 Values for Mandarin Tones (generalized from Howie, 1976)	69
2.10 Tone Duration (taken from Tseng, 1990)	70
3.1 Independent and Dependent Variables in the Study	75
3.2 Templates for Types of Two-Syllable Words	78
3.3 Templates for Types of Three- Syllable Words	78
3.4 Number of Subjects per Language Group	79
3.5 Demographic Information of Learners in the Perception Test	79
3.6 Number of Subjects per Language Proficiency Levels	80
3.7 Summary of Research Questions, Methods of Data Collection & Data Analysis	83
3.8 Reliability of the Instruments	85
4.1 The Mean Scores in the Perception of Lexical Stress for both Language Groups	88

4.2	One Way ANOVA of Iraqi Arabic Subjects Proficiency Levels Mean Scores in the Perception of Lexical Stress	90
4.3	One -Way ANOVA of Chinese Malaysian Subjects Proficiency Mean Scores in the Perception of Lexical Stress	91
4.4	Tests of Between Subjects Effects	93
4.5	Independent Samples Test Mean Scores of Match and Mismatch Syllable Structure for both Language Groups	99
4.6	The Mean Scores in the Perception of Lexical Stress in Disyllabic and Trisyllabic for both Language Groups	101
4.7	Iraqi Arabic Subjects Mean Scores in the Perception of Lexical Stress in Disyllabic and Trisyllabic Structures	103
4.8	Paired Samples Test for Chinese Malaysian Language Group Mean Scores in Disyllabic and Trisyllabic Structures	104
4.9	Tests of Between Subjects Effects	106
4.10	The Rank Order in the Perception of Lexical Stress in Disyllabic Structure by Iraqi Arabic Subjects	110
4.11	The Error Rates in Disyllabic Structure by Chinese Malaysian Subjects	111
4.12	Error Rates in Trisyllabic Structures by Iraqi Arabic Subjects	113
4.13	The Rank Order in Disyllabic Structures by Chinese Malaysian	114
4.14	Paired Samples Statistics of Iraqi Arabic Mean Scores in the Perception of Lexical Stress in Real and Nonce Words	118
4.15	Paired Samples Statistics of Chinese Malaysian Mean Scores in the Perception of Lexical Stress in Real and Nonce Words	119
4.16	Independent Samples Test of both language groups in the Perception of Lexical Stress in Real and Nonce Words	121
4.17	Paired Samples Statistics of Iraqi Arabic Mean Scores in the Perception of Lexical Stress in Disyllabic Words	123
4.18	Paired Samples Statistics of Chinese Malaysian Mean Scores in the Perception of Lexical Stress in Disyllabic Words	124
4.19	Independent Samples Test Mean Scores in Initial and Final position of Disyllabic Structure for both Language Groups	125

4.20	One-Way Repeated Measure ANOVA of Iraqi Arabic Mean Scores in the Perception of Lexical Stress in Trisyllabic Structure	127
4.21	One-Way repeated measures ANOVA of Chinese Malaysian Mean Scores in the Perception of Lexical Stress in Trisyllabic Structure	128
4.22	Independent Samples Test Mean Scores for both Language Groups based on Stress Position in Trisyllabic Structure	129



## LIST OF FIGURES

Figure	Page	
1.1	The Theoretical Framework of the Current Study	10
1.2	Typology of Stress Parameters (Altmann, 2006, p.38, Following Vogel, 2000)	12
1.3	Dresher and Kaye's (1990: 140-1) Stress Parameters	14
2.1	A Family-Tree Diagram of Language Families, Hetzron and Bender (1976)	46
2.2	Degrees of Prominence according to Ladefoged (2005)	54
2.3	Garding's Model	66
2.4	F0 Contour (Moore & Jongman, 1997:1865)	69
2.5	Tone Amplitude Contour (Fu & Zeng, 2000:50)	71
3.1	The Conceptual Framework of the Study	73
3.2	The Screenshot of the Perception Experiment Multiple Choices	82
4.1	The Mean Scores in the Perception of Stress for both Language Groups	88
4.2	Iraqi Arabic Subjects Proficiency Mean Scores in the Perception of Lexical Stress	91
4.3	Chinese Malaysian Language Proficiency Mean Scores in the Perception of Lexical Stress	92
4.4	Language Groups Proficiency Levels Interaction in the Perception of Stress	93
4.5	Iraqi Arabic Profile Plots in the Perception of Lexical Stress based on Syllable Condition	96
4.6	Chinese Malaysian Profile Plots in the Perception of Lexical Stress based on Syllable Condition	97
4.7	Language Groups Mean Scores in the Perception of Lexical Stress based on Syllable Condition	98

4.8	The Mean Percentage Scores in the Perception of Lexical Stress in Match and Mismatch Syllables	99
4.9	The Mean Scores in the Perception of Lexical Stress in Disyllabic and Trisyllabic Structures	102
4.10	The Mean Scores in the Perception of Lexical Stress in Disyllabic and Trisyllabic Structure	103
4.11	The Mean Scores in the Perception of Lexical Stress in Disyllabic and Trisyllabic Structures	105
4.12	Iraqi Arabic Subjects Mean Scores in the Perception of Lexical Stress in Disyllabic and Trisyllabic Structures	106
4.13	The Profile Plots of Chinese Malaysian Language Group in Disyllabic and Trisyllabic Structures in Nonce Words	107
4.14	The Mean Scores in the Perception of Lexical Stress in Disyllabic and Trisyllabic Structures	108
4.15	Iraqi Arabic Subjects Rank Order in the Perception of Lexical Stress in Disyllabic Structures	110
4.16	Chinese Malaysian Subjects Rank Order in the Perception of Lexical Stress in Disyllabic Structures	112
4.17	Error Rates in the Perception of Lexical Stress in Disyllabic Structure for both Language Groups	112
4.18	The Rank Order of Iraqi Arabic Subjects in Trisyllabic Structures	114
4.19	The Rank Order of Chinese Malaysian Subjects in Trisyllabic Structure	115
4.20	Both Languages Groups Error Rates in Trisyllabic Structures	116
4.21	The Mean Scores in the Perception of Lexical Stress in Real and Nonce Words	119
4.22	Chinese Malaysian Mean Scores in the Perception of Lexical Stress in Real and Nonce Words	120
4.23	The Mean Scores in the Perception of Lexical Stress in Real and Nonce Words for both Language Groups	121
4.24	The Mean Scores of Iraqi Arabic Subjects in the Perception of Lexical Stress based on Stress Position	124

4.25	The Mean Scores of Chinese Malaysian Subjects in the Perception of Lexical Stress based on Stress Position	125
4.26	The Mean Scores of both Language Groups based on Stress Position	126
4.27	The Mean Scores of Iraqi Arabic Subjects in the Perception of Lexical Stress based on Stress Position	127
4.28	The Mean Scores of Chinese Malaysian Subjects in the Perception of Stress based on Stress Position	128
4.29	The Mean Scores of both Language Groups based on Stress Position in Trisyllabic Structure	130
4.30	The Mean Scores of both Language Groups Based on Stress Position in Trisyllabic Structure	130

## LIST OF ABBREVIATIONS

ESL	English as a Second Language
EFL	English as a Foreign Language
SDM	Stress Deafness Model
STM	Stress Typology Model
WS	Weak Syllable
SS	Strong Syllable
C	Consonant
V	Vowel
L1	First Language or Native Language
L2	Second Language or Target Language
TL	Target Language
NSS	Native Speakers
NNSS	Non- Native Speakers
F0	Fundamental Frequency
ANOVA	Analysis of Variance
CEFR	Common European Framework of Reference
OPT	Oxford Placement Test
QSL	Quantity Sensitive Language
QIL	Quantity Insensitive Language
MSA	Modern Standard Arabic
SLM	Speech Learning Model
PAM	Perceptual Assimilation Model
L2LPM	Second Language Linguistic Perception Model
MDH	Markedness Differential Hypothesis
O	Obstruent
S	Sonorant
G	Diphthong

# CHAPTER 1

## INTRODUCTION

### 1.1 Background of the Study

Generally speaking, the ability to perceive and produce the location of lexical stress is fundamental in speech perception and speech production particularly among speakers of a language where lexical stress carries important information. It plays an essential role in the comprehensibility of the message transmitted from speaker to a listener. This speech process gives an impression of simplicity as every ordinary speaking and hearing person who communicates regularly through speech does this effortlessly particularly among interlocutors who share the same language code.

This fact is also strengthened by earlier studies which showed that the ability to accurately perceive the main stress is considered a significant component in native speakers' perception and control of speaking (Cutler, 1984; Field, 2005). More importantly, even if there are grammatical errors, native speakers are still able to understand the utterances of L2 speakers, but incorrect stress assignment may be considered more challenging as it provides room for misunderstanding of L2 speech (Munro & Derwing, 1995). The most convincing reason for considering lexical stress lies in several L1 studies that provided concrete evidence in which the wrong assignment of stress affect speech intelligibility. Some representations of speech transference increase the probability that a stressed syllable of a word presents a listener with a code that links directly to the representation of the word in the mind. For example, the stressed syllable / næ / guides the search for the word *international* as does the stressed syllable / t ɒ g / for the word *photography* (Grosjean & Gee, 1987).

In the field of second language speech perception, experts recognized that subjects from a tone language system encounter difficulty in performing patterns of stress similarly as native English speakers do (Archibald, 1997; Peperkamp & Dupoux, 2002). For instance, L2 subjects in which stress position is fixed in their language system, such as French language, are reported to be 'stress deaf' (Peperkamp & Dupoux, 2002). That is, they have impediments in identifying stress differences. In the same way, other investigators have revealed that Chinese L2 learners, a tone language, likewise have weaknesses in detecting stress location. These weaknesses are due to the excessive transfer of their tone patterns to indicate the main stress. That is to say, within the word boundary, English stress helps discriminate the inference whereas in Chinese, it is the tone that encodes contrast of meaning at the limit of the word. Thus, the dissimilarities between English and Chinese languages could affect the performance of Chinese ESL subjects in capturing English lexical stress (Chao, 1980; Juffs, 1990).

There are many theories that represent the close relation between production, perception and the learning of a specific language. However, earlier theories were concentrated on the acquisition of the segmental aspect of phonology (consonants and vowels) such as Flege's (1995) Speech Learning Model (SLM), and Best's (1995) Perceptual Assimilation Model (PAM), Best and Tyler's (2007) PAM-L2 and Escudero's (2005) Second Language Linguistic Perception Model (L2LP). In other words, the above mentioned theories and models focus on learning the phonological sounds in the phonological inventory of various L2 languages. However, very little research have focused on L2 suprasegmental phonology and on issues connected to the acquisition of L2 stress patterns and this is the emphasis of the current study. In fact, the phonological system of any language includes both the segmental and suprasegmental phonology. That is to say, the sound system of any language stands for the segmental part which represents consonants and vowels, whereas stress, rhythm and intonation represent the suprasegmental part of phonology.

Lehiste (1970) linked suprasegmental physical characteristics of speech using units more than the segment such as pitch, stress, and duration. He added that pitch indicates the impression of higher and lower tone, stress indicates prominence at words and sentences boundaries, and duration refers to length variances between unlike segments or between the articulations of matching segment in dissimilar settings. Lately, the study of suprasegmental features has been also called the study of prosody. The prosodic structure denotes the phonological components, such as the syllable, the intonational phrase and the tonal structure (Hayes, 1989; Nespor & Vogel, 1986; Selkirk, 1980). Besides, Moore (2001) clarifies that the foot is a component that comprises a stressed or strong syllable and unstressed or weak syllable, with languages selecting between trochees (S±W) and iambs (W±S). He also adds that syllabification is a recurrently applied analytic process for the phonological word in which consonants represent onsets and using vowels to the right. Therefore, the structure of the phonological word might be lesser or greater than the morphological word. Besides, in many languages, the process of syllabification is smaller in compound words where each component is a distinct syllabification domain (e.g., English cat's eye syllabifies as ['kæts. ai], not as ['kæt. saɪ]. Abu-Salim (1998) provides a concise definition of syllabification as a process by which an utterance is divided into syllables according to specific principles. Although the structure and types of the syllable are different from one language to another, there are general principles for categorizing the syllable such as quality (weak or strong), quantity (heavy or light) and complexity (simple or complex). Accordingly, stress is the major factor that determines whether a syllable is strong or weak. Weak syllables are shorter and have less intensity than strong syllables. Syllables are divided into heavy and light syllables. In terms of complexity, a syllable can be either simple with a vowel or a vowel accompanied by a single consonant (v, cv, cvc), other types are considered to be complex (Roach, 2009).

Abdul-Halim (1996) states that Arabic is one of the languages in which stress and syllable quantity are interrelated. Arabic depends only on syllable quantity for stress assignment, while English places stress on words according to three factors: the syllable quantity, the grammatical category and the morphological structure of the

word. Stress assignment in Arabic is totally dependent on syllable quantity, position and vowel length that determines which syllable is to be stressed; therefore, in multi-syllabic words if the final syllable is super heavy, it receives the primary stress otherwise stress is shifted either to the penultimate or the antepenultimate syllable. Iraqi Arabic dialect is also a quantity sensitive variety of Arabic, since it distinguishes between light and heavy syllables. As has been noted, the different stress rules of a particular language lead to variations in the assignment of L2 stress systems by L2 speakers. Many studies support the notion that the different assignment of stress causes the meaning of the word to be altered and no longer reflects its intended meaning. If the second syllable of the word adoLEscent, for example, wrongly receives the primary stress, it sounds like a DOLLer-cent (Baptista, 1981). Besides, Avery and Ehrlich (1992) argue that the primary reasons for L2 language errors are the result of the transmission of their L1 language sound classifications. Thus, the setting of a foreign pronunciation is controlled to a great degree by a learner's L1 language and the articulation variations produced by L2 trainees in the imitation of L2 sounds and practices of linking sounds.

Another example of L1 transfer at the suprasegmental level which emphasizes the importance of stress assignment is the role it plays in distinguishing between nouns and verbs in English such as 'PROduce' (Noun) and 'proDUCE' (Verb). Stress falls on the first syllable for nouns but for verbs, stress is placed on the second syllable (Jangjamras, 2011). This is an obvious indication that variation or inaccurate application of the suprasegmental features could interfere with the intelligibility and comprehensibility of speech and these effects can be more damaging compared to errors or variation at the segmental level.

Some researchers such as Archibald (1993) and Youssef & Mazurkewich (1998) think that using real word stimuli may help get more accurate results. Others such as Pater (1997) and Altmann (2006) believe in the importance of using nonce words instead of real words. They think that the use of nonce words will control for familiarity effect that result from experience with real words. Indeed, it is problematic to distinguish whether the detected stress placement is based on metrical grid computation or syllable weight understanding or if it is just memorization or experience with another mispronounced word. The use of real words written in English orthography also cannot test whether L2 speakers allocate stress from already known patterns based on a preceding exposure to the test items or based on sensitivity to what is heard from the stimuli. Therefore, the use of nonce words can assist to avoid the familiarity effect but not the orthography effect.

As the sound system in native and second languages may have differences such as differences in phonemes inventories and stress assignment patterns, L2 learners may face problems in perceiving and producing the phonemes of an L2 language (Jangjamras, 2011; Odlin, 1997). Archibald (1993) further argues that L1 stress assignment procedures may be used by L2 learners in the production of L2 words. More specifically, they might allocate stress in a position that does not fit the second language stress patterns. In the acquisition of a particular language, learners reset some

parameters and mis-set others when they acquire a second language (Thornton & Tesan, 2007). Thus, it is important to realize that there are many variables that affect the identification and the assignment of lexical stress at the word level. Firstly, L1 parameter plays a decisive part in determining the perception and production of L2 phonology. Consequently, the role of L1 is very significant and is guided by similarities and differences among languages. In cases where similarities exist between the two languages, L1 may help in the acquisition of the L2. On the contrary, if differences appear then L1 may impede the acquisition method. Therefore, second language learners often face difficulty in mastering the accent and intonation patterns of their target language (Archibald, 1997; Pater, 1997). However, the difference between learners depends on whether learning takes place in native or non-native settings.

In L1 native settings, learners acquire language under instruction. Whereas in the case of a target language or L2 non-native settings, learners acquire L2 syllable and stress patterns in natural settings as they are exposed to the native accentuation system. This is because L1 parameters control their perception and production process, while in the settings of the TL their perception and production will be determined by the TL parameters (Fantazi, 2003; Watson, 2002). According to Johnson and Johnson (1999) learners are exposed to input primarily from native speakers (NSs) which is greater in a realistic setting in contrast to a trained setting in which L2 subjects have narrow exposure to participation in the target language provided by L2 speakers (NNSs).

The proficiency of second language learners is determined by language proficiency and learning such as advanced, intermediate and beginning levels. Previous studies showed that advanced L2 learners achieve accurate scores and shorter reaction time in the identification of English lexical stress. Schwab and Llisterri (2011) conducted an experiment on two groups of French speaking participants. The first group includes participants who are advanced in Spanish and the second group is not familiar with the language. The material was made up of four triplets of three syllabic words (cv.cv.cv) and four triplets of three syllabic equivalent nonce words. The results show that the advanced level subjects of Spanish identify the main stress more perfectly than those who are not familiar with the language.

In another study done by Tremblay (2009), the perception of word stress was examined among seventy six French L2 apprentices of English and thirty one native English speakers of different language proficiency aptitudes. They completed an ABX perception experiment in English. The findings demonstrate that second language apprentices encounter difficulty identifying stress and all language proficiency levels show poor performance in the task when compared to English native speakers. The competence of a learner is associated with language learning and age of learners. They state that participants at advanced levels achieve more accurate results in contrast to intermediate and beginner levels or participants with no knowledge of the language in the lexical stress identification task (Schwab & Llisterri, 2011; Tremblay, 2009). Additionally, previous studies assert that the reaction times of stress perception for advanced learners may be shorter than for learners at lower proficiency levels. The

results of the study by Schwab and Llisterri (2011) indicated that the daily exposure to and the use of L2 makes advanced L2 learners “more sensitive” to recognition of L2 stress placement (Schwab & Llisterri, 2011: 238). The difference between the advanced group and the group with no knowledge of the L2 is obvious in their dependence on different factors in stress perception: proficient learners got better results in stress perception when all three parameters (F0, amplitude and intensity) are manipulated together, whereas subjects with no L2 knowledge were dependent on duration and intensity (Schwab & Llisterri, 2011). Other previous investigations have demonstrated no important difference among L2 learners at different levels of proficiency in the production experiments (Archibald, 1992; Erdmann, 2009). Archibald (1992) investigated the production of English real words from seven different categories among Polish learners of English. The results displayed that even when learners’ grammar scores increased there was no development in their productions. Even though the Italian M.A. students as advanced L2 German learners in Paschke’s (2013) study, performed in a more native-like manner in assigning stress to Italian-German word cognates with penultimate stress patterns compared to the B.A. students, the difference was not statistically significant.

Lord (2001) explored the production of Spanish lexical stress placement by native English speaking learners on three proficiency levels: beginners, intermediate and advanced learners. The results indicated a significant difference in the performance between beginner (62.5% accuracy rate) and advanced learners (92.5% accuracy rate), and also between beginners and intermediate learners (79% accuracy rate). Moreover, all three groups had slightly higher accuracy rate (beginner: 57.62%, intermediate: 79.27%, advanced: 91.98%) for cognate words with different stress patterns in both languages compared to non-cognate words; however, the accuracy rate was the highest when cognates shared stress patterns in the L1 and L2 (beginner: 77.33%, intermediate: 94%, advanced: 99.41%). The results show that L2 learners, particularly beginners, have problems with lexical stress assignment to cognate words when the stress patterns in L1 and L2 are different, whereas they tend to assign stress more accurately when the cognates have matched stress patterns in both languages.

## **1.2 The Problem Statement**

It is well recognized that L2 learners of different native language backgrounds face difficulty in the perception of L2 lexical stress patterns which are prohibited in their native language (Altmann & Vogel, 2002; Altmann, 2006; Peperkamp & Dupoux, 2002). Therefore, Iraqi Arabic and Chinese Malaysian L2 learners are expected to face difficulty in the perception and production of English lexical stress patterns that are mismatched with their native language stress patterns. The difference between English, Arabic and Chinese stress system may play a role in understanding the perceptual difficulties of these L2 learners as the wrong identification of stress assignment affect the intelligibility in communication. L2 learners of English frequently experience difficulties in English lexical stress perception. This has traditionally been attributed to prosodic component transfer or settings from their first language (L1). Correspondingly, the problem of Chinese learners with the perception

of English stress was expected to rise from tonal transfer. However, little research has been devoted to the examination of the phonetic details of second language (L2) stress perception. The current study focuses on the perception of English lexical stress by Iraqi Arabic and Chinese L2 learners of English.

Words in utterances are neither spoken with the same degree of stress nor on a monotone. In all languages there should be variations of stress and pitch, although these languages do not use these variations in the same way. For example, in analysing any English sentence, there are certain suprasegmental constituents for example, stress and intonation which should be taken into consideration because a change of these features would lead to a difference in meaning and misunderstanding. English is a language which depends heavily on the above mentioned features. Therefore, in utterances consisting of more than one word, some of the words are more important than others, the importance of these words is attained by making them prominent. At the level of words, stress refers to the degree of prominence by which a syllable is pronounced or uttered. In this regard, a word may have one syllable which is more prominent and louder than the other. Therefore, it is identified or perceived as a prominent syllable because it is higher and louder than the other syllables.

The degree of prominence by which a syllable is produced is different from one language to another and even among dialects of the same language. For instance, there are languages in which the placement of stress is predictable such as Arabic and languages in which stress is less predictable such as English and other languages that do not have lexical stress in the language at all such as Chinese and Japanese. These differences, in stress systems of languages, are expected to cause some problems for L2 learners in the perception of lexical stress (Altmann & Vogel, 2002; Altmann, 2006; Peperkamp & Dupoux, 2002; Wang, 2008).

Arab learners of English face problems in the perception of English lexical stress because of the differences of their L1 stress patterns. Previous studies predict poor stress discrimination by speakers L1 predictable stress languages and excellent discrimination by non-stress languages and the performances of L2 learners' identification accuracy percentages were lower than the native speakers except when stress is on the super heavy final syllables. Therefore, Arabic L2 learners revealed good performance at cases where stress patterns are matching in L1 and L2 (Altmann, 2006; Altmann and Vogel, 2002; Al-Ani, 1992; Odlin, 1997; Smith, 2001; Youssef and Mazurkewich, 1998). However, there is also a lot of variation in L1 stress patterns among speakers of different Arabic dialects. Hence, there is a need to examine the effect of L1 stress patterns in one Arabic variety to understand the issue better regarding lexical stress identification. Word stress is presented in all Arabic dialects; nevertheless, the social and environmental contrasting region where Arabic language is articulated results in modifications in the patterns of primary stress assignment. However, the distribution of syllable types also differs from one dialect to another. Consequently, further consideration is given to Arabic word stress than the word stress of any language other than English within the phonological theory (Watson, 2011).

Additionally, the Arabic language has three syllable weights: light syllables, heavy syllables and superheavy syllables. Light syllables are always open, for example the syllable structure /CV/, heavy syllables may be open syllables as in /CVV/ or closed syllables as in /CVC/, while super heavy syllables are closed or doubly closed as in the syllable structures /CVVC/ or /CVCC/ (Watson, 2011). How syllable weight affects L1 stress assignment in different Arabic dialects is also an important consideration. For example, as /katabahu/ 'he wrote it' in a Classical Arabic is articulated with penultimate stress in Egypt, but antepenultimate stress in Lebanon and Jordan (Kaye, 1997). For that reason, the notion of lexical stress might be very significant for Arabic ESL learners because L2 learning is affected by L1 transfer where L2 learners might often be misheard or misunderstood.

Furthermore, spoken English depends heavily on the phonological device of nucleus shift or placement in the area of emphasis; while Arabic depends on the lexical devices more heavily than the phonological device. The dependence of English on nucleus shift and of Arabic on the lexical devices in addition to the differences in language specific devices on the syntactic level and the differences in lexical devices might be problematic to Arabic L2 learners of English. This is illustrated by the fact that such a problem leads to inadequate comprehension and undesirable errors on the recognition and production levels. Nevertheless, stress frequently causes difficulties for Arabic ESL learners because they frequently misplace stress in English words and in turn it might possibly disturb their progress in speech and cause incomprehensibility (Ahmed, 1990).

Major (2008) confirms that Arabic L2 learners do not have the ability to comprehend second language changes that are not found in their native language. Therefore, these changes impede their acquisition of English specifically the placement and identification of stress in English words. These issues may be traced to mother tongue interference. Aziz (1980) also accounts for some problems in the placement of stress for Iraqi Arabic learners in simple stressed words. He demonstrates that the main stress is located either on the first or second syllable of a word. Long unstressed syllables in final positions of English words make Arabic learners encounter difficulty in the identification of the most prominent syllable or in the assignment of stress as they tend to assign stress to the final syllable that contains a heavy or a superheavy syllable. For example, 'complicate is pronounced as compli'cate; 'concrete, con'crete; 'classify, classi'fy; 'scientist, scien'tist. The reasons for this shift is that in spoken Iraqi Arabic along with Modern Standard Arabic, incentives ending in a long syllable, cv:(c) or cvcc, are considered superheavy and they attract stress. That is why there is a tendency to assign stress to the final syllable for English words as shown in the earlier examples.

Iraqi Arabic learners also have problems with words that have a short syllable in final position when it is preceded by an unstressed long syllable. For instance, ANcestor is frequently uttered anCEStar. In the spoken language of Arabic ESL learners, as it is the case when the stimuli ending in -cvc-cv (c) or -cv:-cv, stress is assigned on the penultimate syllable. As a result of different stress assignment rules that operate in the

L1, Arabic ESL learners encountered a serious difficulty in stress perception and production irrespective of the stages of their study (Archibald, 1997; Pater, 1997).

The system of stress assignment in Arabic is predictable. For instance when the word consists of only light syllables /'kasara/ 'he broke', the first syllable receives the primary stress. However, stress is placed on the second syllable in the word /sa'diiq/ 'friend' and on the penultimate syllable of the word /mun'tadda/ 'assembly' because heavy syllables attract stress. In spite of the shift of stress from one position to another, it does not disturb the meaning of the word which reflects an important characteristic about Arabic language which is the non-phonemic nature of stress assignment (Fantazi, 2003; Kijak, 2009). In contrast, English and other Germanic languages take advantage of stress differences (Ladefoged, 2006; Laver, 1994). Stress in English is not predictable and it is phonemic. For example, in trisyllabic and polysyllabic words of English the primary stress may be assigned on the first syllable such as: /'leksikil/ 'lexical', or on the second syllable: /im'pɜ:fikt/ 'imperfect', or on the third syllable as in: /ʌndə'steit/ 'understate' and /nætʃrə'listik/ 'naturalistic'.

There is more variety in stress patterns in English. For example, if stress is assigned on the initial position of the words 'present /'preznt/, 'rebel /'rebl/ and 'desert /'dezət/, we get a noun, while if it is placed on the second syllable of the words pre'sent /prɪ'zent/, re'bel /rɪ'bel/; de'sert /dɪ'zɜ:t/, we get a verb. As a result of this variety in stress assignment, the meaning of these words will be different (Minkova & Stockwell, 2009). In fact, there is no phonological justification for this variety of stress assignment in English. Therefore, ESL learners cannot predict the exact position of English stress based on syllable patterns and if they want to do so, they have to learn the word and the position of stress as it is in the dictionary. This is a good indication that stress in English is problematic and difficult to identify in contrast with Arabic and we assume stress as a quality of specific word (O'Connor, 1980).

Several models such as: Stress Deafness Model (SDM) and Stress Typology Model (STM) assert that the amount of success in identifying stress changes minimizes with expanding the awareness of stress placement in the native language. They predict poor stress discrimination by speakers of L1 predictable stress languages and excellent discrimination by speakers of non-stress languages. Other studies assume that the stress patterns of first language influences the perception of L2 stress patterns (Archibald, 1998; Altmann, 2006; Berinstein, 1979; Dupoux et al., 1997; Dupoux et al., 2001; Peperkamp & Dupoux, 2002; Altmann & Vogel, 2002). Hence, previous cross-linguistic studies in English lexical stress perception and production (e.g., Altmann, 2006) showed that Arabic learners performed poorly in perception and production of the primary stress on nonce words and they scored significantly lower than speakers of L1 without stress and speakers with non-predictable stress. Although the results of previous studies revealed poor performance for predictable stress languages, they focused on either the production of stress or the perception of stress within a small number of L2 learners of a particular Arabic dialect. Many other factors that could have influenced the performance of the subjects were not taken into consideration. For example, syllable number and weight, syllable status whether it is

matched or mismatched L1 stress assignment rules, sample size, word category (real or nonce) vary from one language to another and even among dialects of the same language and may lead to differences in the assignment of stress.

Consequently, speakers of different Arabic dialects may perceive and produce English lexical stress differently. Most previous studies use only one type of word category, one type of syllable structure, small number of sample size of each language variety and one level of language proficiency (Jangjamras, 2011; Kijak, 2009; Wayland, 2006). Thus, the foremost purpose of the existing study is to fill the insufficiency in literature and to reconsider some of the disagreements among researchers about the use of real or nonce words as stimuli and whether the word category has a direct effect on the performance of two different language groups of L2 learners: the first group comprises Iraqi Arabic ESL learners who represents the predictable stress language with three scales of English language proficiency while the second ESL subjects are Chinese Malaysians who represents the non-stress language.

### **1.3 Objectives of the Study**

The objectives of the current study are as follows:

1. To identify language type effect on the overall performance means percentage scores in the perception of lexical stress.
2. To identify language proficiency effect on the performance of both language groups in the perception of lexical stress.
3. To identify the overall performance mean percentage scores in the perception of lexical stress based on match and mismatch syllabic structures.
4. To identify the effect of word length on the mean percentage scores of both language groups in the perception of lexical stress.
5. To investigate the most difficult disyllabic and trisyllabic structures for each language group to be perceived.
6. To investigate the effect of word category on the performance of both language groups in the perception of lexical stress.
7. To investigate the effect of stress position on the mean percentage scores of both language groups in the perception of lexical stress.

### **1.4 Research Questions**

The main objective of the current study is to address the following research questions:

1. Is there any language type effect on the overall performance mean percentage scores in the perception of lexical stress?

2. Is there any language proficiency effect on the performance of both language groups in the perception of lexical stress?
3. What is the overall mean percentage scores in the perception of lexical stress based on match and mismatch syllabic structures?
4. Is there any word length effect on the mean percentage scores of both language groups the perception of lexical stress?
5. Which are the most difficult disyllabic and trisyllabic structures to be perceived by each language group?
6. Is there any word category effect on the performance of both language groups in the perception of lexical stress?
7. Is there any stress position effect on the mean percentage scores of both language groups in the perception of lexical stress?

### 1.5 The Theoretical Framework of the Study

In reviewing the related literature of the present study, there are many models, theories and hypotheses which help to clarify the issues concerning L2 acquisition of lexical stress. The current study explored the influence of L1 stress features on second language acquisition of lexical stress with regard to two modern models of lexical stress: the Stress Deafness Model (SDM) (Peperkamp & Dupoux, 2002) and the Stress Typology Model (STM) (Altmann & Vogel, 2002) which has been the only model to predict the success rate of stress perception. According to these conclusions, STM clarifies that in speech perception, only equivalent patterns appear to obstruct the ability to appropriately identify prominent syllables, whereas different patterns would not affect the performance. In contrast, speakers with similar patterns for 'stress language' would assign second language stress in an identical method, whereas speakers of non-stress languages would produce dissimilar stress assignment systems. See Figure 1.1.

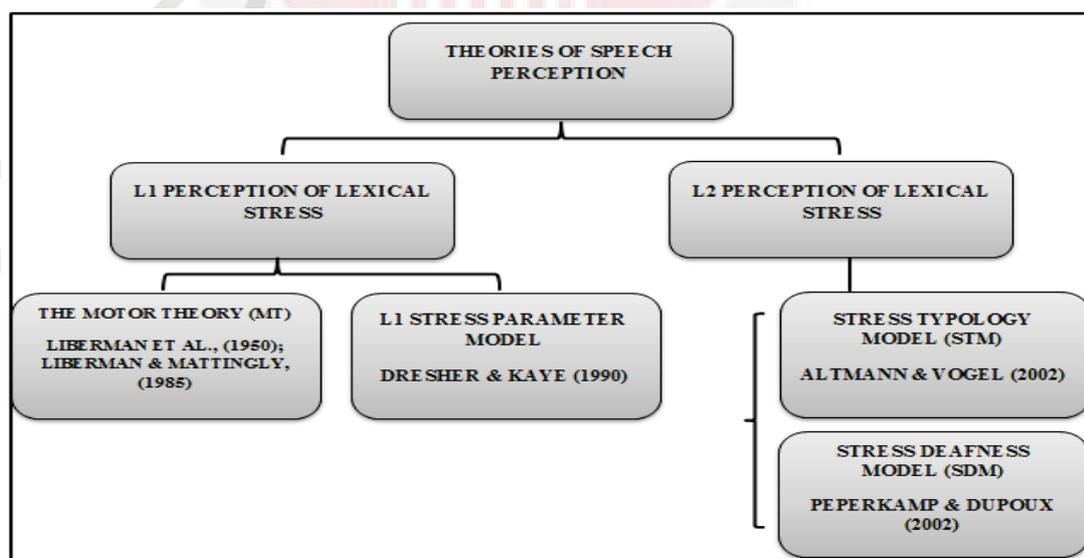


Figure 1.1 : The Theoretical Framework of the Current Study

There are many phonetic cues such as pitch of voice, duration, intensity and manner of articulation that help in the identification of a stressed syllable in words. Moreover, vowel lengthening and gemination strengthens the stressed syllable while vowel reduction weakens the unstressed syllable. The characteristics of stress have been discussed in the literature as early as Trubetzkoy (1969). First, stress is culminative, that is, its domain has only a primary stress. Second, it is a syntagmatic property that is a quality of the linear components making the stress domain. Third, it is demarcative that it indicates in a straight line the word border if it is placed at a word edge or on the penultimate syllable (Kager, 1995).

Languages have metrical systems that can be predictable or unpredictable and rhythmicity is its critical characteristics which illustrates that stressed and unstressed syllables have an interchanging pattern to avoid clashes, strings of unaccented syllables and lapses (no more than two unaccented syllables). Munro and Derwing (1995) suggests that it is possible for non-native speakers to understand L2 utterances even if there are grammatical errors, but the wrong assignment of lexical stress may contribute to the misunderstanding of L2 speech. That is why the production and perception of lexical stress in a second language is considered as the main areas of difficulty because of its importance in the comprehensibility of non-native speech than in their ability in the grammatical accurateness in the L2 utterance. Maczuga (2014) also adds that the main reason of the wrong stress assignment is the transfer from learners' first language.

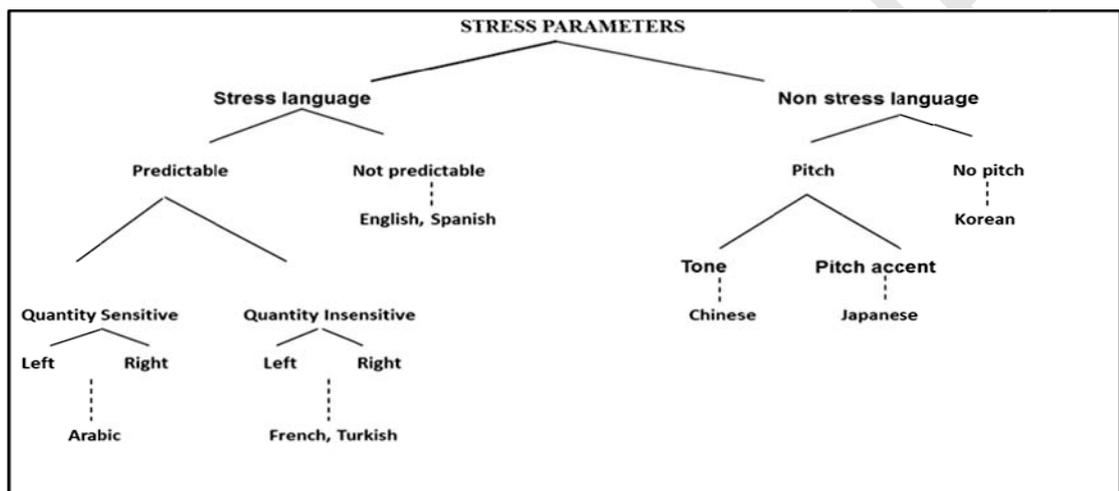
### **Stress Deafness Model**

Peperkamp and Dupoux (2002) proposed a hierarchy of languages with predictable stress. They associate languages that have more predictable stress with poorer stress discrimination compared to their discrimination of segments. In this model, subjects were asked to remember two nonce words that are different in one of two scopes: segmental (e.g. *kupi* vs. *kuti*) or stress position (e.g. *mipa* vs. *mipa*), and related them with altered keys on a computer keyboard. Subjects were requested to record them using the stated keys in order. Every sequence was followed by the word "OK" to stop the use of echoic memory. The stress discrimination results showed that speakers of various stressed languages vary in their performance (Dupoux et al., 1997; Peperkamp & Dupoux, 2002) and the features of their L1 stress were used as the grounds for the model. SDM is concerned only with general perceptual ability, but not with stress production or issues in L2 acquisition. In addition, new findings by Peperkamp, Vendelin and Dupoux (2010) have shown that SDM's classification is not detailed enough in predicting stress discrimination of speakers from various stress backgrounds. For more details see section 2.4.1.

### **Stress Typology Model**

The Stress Typology Model (STM) was suggested by Altmann & Vogel (2002) and elaborated by Altmann (2006). STM predicts the success rate of bilinguals' L2 stress perception according to their L1 stress patterns/parameters. STM predicts poor stress

discrimination by speakers of L1 predictable stress languages and excellent discrimination by L2 learners of non-stress languages (i.e., nonce word level stress). STM categorizes languages as predictable stress languages, non-predictable stress languages, and further categories non-stress languages into tone languages and pitch accent languages. The model assumes that negative settings of any factor have no impact on the success of L2 acquisition of stress, while positive settings are likely to cause interference. The predictions of this model were borne out in Altmann (2006). Altmann showed that native speakers of languages without word-level stress (Chinese, Japanese, and Korean) made close to perfect scores in an English non-word stress identification task while speakers of unpredictable stress languages (Spanish) scored second best. See Figure 1.2.



**Figure 1.2 : Typology of Stress Parameters**  
(Altmann, 2006, p.38, following Vogel, 2000)

In contrast, predictable stress languages native speakers (Arabic, Turkish, and French) had problem identifying lexical stress position in the same experiment. Altmann acknowledged that the model only accounted for observable surface stress patterns in L1 production. The model is not limited to L1 stress languages; it also includes non-stress languages. The STM does not deal with the perception of acoustic cues for L2 stress or sensitivity to certain acoustic signals of L2 stress that could be transferred from sensitivity in the L1 prosodic system, e.g., acoustic correlates of L1 stress, L1 tone, pitch accent, intonation or phonemic duration contrast.

Altmann (2006) found that speakers from fixed-stress languages (Arabic, Turkish and French) produced stress patterns similar to those native speakers. Speakers with irregular stress (Spanish) showed ambiguous systems or tended to stress the final vowel while speakers from L1 non-stress languages such as (Chinese, Japanese, Korean) produced stress patterns that cannot be clustered together. Altmann (2006) is a systematic study that uses nonce word as stimuli in contrast to previous studies which use real word stimuli. The use of non-words can avoid the familiarity effect found in

the use of real word stimuli. The STM includes languages with predictable stress, non-predictable stress and non-stress languages; therefore, it is more generic than SDM. According to the STM, languages are classified into two central pools based on the presence of lexical stress on their language system or not. For more details see section 2.4.2.

### **The Motor Theory**

The motor theory is scientifically revised to provide the latest results and to link the assumptions of the model to those that might be made about other perceptual features. The revised model states that the phonetic signs are perceived in a remarkably different unit of organization, 'a module' which is measured to identify intended signs of speakers that are considered the source for phonetic classifications but it permitted the link between the contrarily paralleled signals and the acoustic methods. Then, the module helps understanding phonetic gestures that need understanding from initial acoustic imitations (Festinger, Burnham, Ono & Bamber, 1967). Moreover, the theory has focused on observations that do not basically extend separately from the field of speech (Chistovich, 1960; Dudley, 1940). It simplifies that speech realization is frequently a method of recognizing the articulatory gestures of speech. A Motor Theory of speech perception considered patients that have motor problems encounter difficulty in the ambiguity of speech act. Contradictorily, the existing neuropsychological proof point out that understanding can be secured regardless of the concentrated deficiencies to production. For more details see section 2.4.3.

### **L1 Stress Parameter Model**

Dresher and Kaye (1990) suggest a system to explain the phonological acquisition of a sub structure, namely, the assignment of stress as a well-maintained component in metrical phonology. These involved Universal Metrical Parameters (based on Hayes, 1981) offered in Figure 1.3 in the computational model YOUPIE to facilitate and compose all possible shared languages' justification for first language acquisition. The available choice of positions is given in brackets for each constraint.

P1: The word tree is strong on the [left/right]
P2: Feet are [Binary/Unbounded]
P3: Feet are built from the [left/right]
P4: Feet are strong on the [left/right]
P5: Feet are quantity-sensitive (QS) [yes/no]
P6: Feet are QS to the [nucleus/rime]
P7: A strong branch of a foot must itself branch [yes/no]
P8A: There is an extrametrical syllable [yes/no]
P8: It is extrametrical on the [left/right]
P9: A weak foot is defooted in clash [no/yes]
P10: Feet are non-iterative [no/yes]

**Figure 1.3 : Drescher and Kaye’s (1990: 140-1) Stress Parameters**

These constraints suggest the basis for the structure of the metrical trees. For instance, location of P1 for ‘right’ and P2 for ‘binary’, as in English, produces languages with primary stress on the final foot. Therefore, stress on the antepenultimate syllable would not be possible in such a language without additional facility. Such a facility is established in P8A and P8, which must be completely determined for English; meanwhile it shows antepenultimate stress.

Additionally, since P2 is selected for ‘binary’, various comprehensive parameters concerning foot constructions (P3-P7) should be established. Therefore, an unrelated grouping of parameters produces contrasting languages, conversely, there are relations between particular factors, that is to say, the category of position for one similarly appends another, for example, in the situation of P5 and P6, where ‘no’ for P5 obviously does not suggest a setting for P6, in addition to the essential setting of P2 for ‘binary’, or significantly needs extra condition (equally in the setting P8A to ‘yes’, to be demarcated in P8). This model takes into consideration the relations between unlike parameters and hence produces overall 216 probable stress patterns (D&K).

The latter two models are related to L1 stress perception not for L2 stress perception; Drescher (1990) explained that in a metrical theory, the patterns and levels of stress are measured by metrical structures. They acquired the method of labelled trees where one is labelled strong and the others are labelled weak and they are spoken in terms of binary parameter. While in the motor theory, it was proposed that the phonetic data is detected in a physically different classification. The model focused to observe the predicted gestures of the speaker that are the source for phonetic classes.

Therefore, the motor theory offers an assessment fundamentally unlike the auditory theories, clearly in the assertion that speech perception is not to be described by principles associated with perception of sounds together but comparatively be recognized as awareness for the phonetic signals. The sounds are not the accurate purpose of perception organized for linguistic objectives in a particular auditory inventory, but they simply suggest an awareness of the phonetic signals (Lieberman & Mattingly, 1985). Thus, they do not fit with the objectives and hypotheses aimed at in present study.

## 1.6 Limitations and Scope of the Study

The researcher has recognized some limitations of the study with the purpose of making it more reasonable and useful. The first limitation is that subjects are restricted to Iraqi Arabic syllabic structures and stress patterns in the perception of lexical stress which may affect the Iraqi Arabic performance as the result of their L1 influence. The study is limited to describing the nature of stress in both languages mainly as a phonological concept; syntax and semantics will be touched upon where necessary. Therefore, it is important to notice that the results will not be generalized to all Arabic dialects performance in the perception of English lexical stress. The second limitation is that the study will adopt the class of noun without suffixes in the construction of the stimuli which adds some difficulty in finding different stress position in the adopted stimuli; it will be promising to take in different word classes as verbs, adjectives and adverbs as the assignment of lexical stress is affected by the word class. Another limitation is that the study is restricted to the identification of primary stress in disyllabic and trisyllabic real words and nonce words.

Moreover, the recruited subjects are Iraqi Arabic who speaks Baghdadi Arabic whereas the Chinese Malaysian subjects are restricted to those who speak Chinese Mandarin in Malaysia. The study will adopt two main models regarding the performance of two typologically different language groups (Iraqi Arabic & Chinese Malaysian) in the perception of lexical stress which are the Stress Deafness Model (Peperkamp & Dupoux, 2002) and the Stress Typology Model (Altmann & Vogel, 2002). Though the claims of the adopted models specify that the performance of non-stress languages is native like, it will be possible to include a native English control group to match the results of both language groups performance.

The other limitation is that the study examined subjects of different disciplines; it may be better to focus on subjects whose major is English language to get accurate results regarding the perception of English lexical stress, as it is an important phenomenon in the perception of speech, to investigate the real problem that L2 learners encounter and to find suitable solutions to solve these difficulties. Lastly, the orientation of this study is mainly quantitative and will aim to acquire the best results by using a limited number of syllabic structures according to the Iraqi Arabic dialect stress patterns that are familiar to Iraqi Arabic L2 learners, since familiarity of syllabic structure can affect L2 learners' performance in the perception experiment of lexical stress.

## 1.7 The Significance of the Study

By and large, native English speakers are exposed to a large number of non-native English speakers and various foreign accents on a daily basis. It is relatively unclear how such accented speech and various speech errors affect native speaker comprehension, as well as precisely which phonological elements affect speech intelligibility the most. A clear realization of those phonological features that are decisive for positive speech perception by native English listeners is very necessary for ensuring effective and informed pronunciation instruction to L2 speakers of English. Since Arabic L2 learners of English encounter several difficulties in their attempt to acquire the suprasegmental system of English phonology including stress patterns, the present study is expected to provide a good recognition of the basis to acquire good articulation and to be well understood while speaking English and to offer some pedagogical suggestions for teaching pronunciation in English classes. It is also appropriate for L2 learners and investigators of English language to pay more attention to the significance of stress assignment in teaching English since the accurate assignment of stress could aid people apprehend what they are expecting from the speaker.

Previous studies such as Altmann (2006) used a small number of advanced ESL learners who are speakers of various dialects of Arabic to test a problem in the perception and production of lexical stress in nonce words. Hence, the contribution of this study is expected to give more insight for understanding L1 effect on new varieties of languages: Iraqi Arabic and Chinese Malaysian ESL learners, two kinds of stimuli: real and nonce words, different syllable structures and a large size of subjects are examined with different levels of proficiency (three English proficiency levels). In addition, the findings of the recent study are likely to be useful to Iraqi Arabic learners and teachers in particular and the Arabic learners in general in increasing their knowledge in understanding and even to aid in teaching lexical stress placement patterns, syllable structures and the phonological systems. In addition, familiarity with the perception and production of lexical stress will assist a language teacher to recognize language learners' problems and realize methods to limit them. The study is expected to extend the outcomes of the previous studies on lexical stress perception and production. Subsequently, larger assessment of processes involved in lexical stress could help in improving and designing better teaching and learning materials and devices for assessing and strengthening L2 learners' performance in this particular phonological aspect.

With such problems intervening, it is obvious that L2 learners still have some problems in the perception and production of L2 lexical stress that have motivated the researcher to plan this study to examine their performance by using both nonce and real words and in the same study to get the possibility of comparing the familiarity effect in the use of both word categories as previously known stress patterns could increase the perception and production scores. Besides, they allow a strict control on syllabic structures and segments of test words.

This methodology would add to the related literature and offer more understanding into learners' interpretations about the phonology of a foreign language and it may assist to solve part of the controversy among researchers on the subject of the perception and production of English lexical stress, thus helping to improve L2 learners' performance to achieve mutual understanding and easier communication. Accordingly, the results of the present study are expected to extend the findings of previous studies on English lexical stress perception.

## **1.8 Outline and Organization of the Study**

The present study is structured as follows:

1. Chapter one is an introduction to the study. It provides the background, the problem statement, the objectives, the research questions, the procedures, and the significance of the study in addition to the operational definitions related to the study.
2. Chapter two discusses a survey of the relevant literature in lexical stress speech perception and production, acquisition of L2 suprasegmentals, L2 stress perception and processing, and acoustic correlates of L2 stress production, and outlines the model adopted for the analysis of the data and investigates the system of stress in English and in Arabic.
3. Chapter three provides a general outline of the study design. It includes the conceptual framework of the study and it discusses the methodology including the experimental design, population, sampling and the data analysis part for the speech perception experiment.
4. Chapter four deals with the analysis of the results of the perception experiment based on the use of lexical stress in real and nonce words.
5. Chapter five is concerned with the findings that will be arrived at in the theoretical and practical parts of the study. After the conclusions based on the results, the pedagogical implications of the results are presented. The chapter ends with some suggestions for further research.

## 1.9 Definition of Terms

For the purpose of the research, the following definitions were used throughout the current study:

### 1. Stress Perception

The ability to identify primary stress position is important for well-organized word recognition and identification (Jongenburger, 1996). In stress languages, there is a difference in the placement of stress. Stress position in stress languages like English and Dutch can have a contrastive property; for example, the location of stress determines word class (i.e., produce is a noun when stressed initially and a verb when stressed finally). Stress in English, and other languages like French and Polish, can be fixed (i.e., always occurring at the word edges) or may be sensitive to syllable weight or the presence of specific affixes, among other factors.

### 2. The Syllable

In general, the phonological division that encompasses at least a vowel is called a syllable. It is permitted that syllables begin or end with one or more consonants and a vowel itself can be a syllable, for instance, “I”, /ai/ or the first syllable of the word open, /ou/. Accordingly, all English phonological word must comprise as a minimum a vowel (Harley, 2003). Syllables can be made up of a simple vowel, even a reduced vowel, such as the initial /ə/ in “attempt”, which has two syllables. They could comprise a consonant and a vowel, such as /hi/ in “he”. They may consist of a consonant, a vowel and a consonant, like /sʌn/ in “Sunday”. In fact, English syllables can encompass up to three consonants in the initial position (the syllable’s onset, as in the word /strɪŋ/, ‘string’ and up to four consonants at the end as in the word /teksts/, ‘texts’. A syllable comprises phonemes, segments that may be divided into consonants(C's) and vowels (V's). The center of the syllable is the nucleus, or the peak. The phonemes that belong to the same syllable as the nucleus and precede it are together termed the onset.

### 3. Stressed Syllables

Ladefoged and Johnson (2001) describe a stressed syllable as a syllable which is pronounced with a bigger quantity of energy than the unstressed syllable. He also adds that it is more prominent in the flow of speech which involves pushing out more air from the lungs by shrinking the muscles of the rib cage. This additional movement could end in a sound that has larger length.

#### **4. Nonce (Pseudo) Words**

A pseudo word is a component of speech that looks as if it is a real word in definite languages despite the fact that it does not have a connotation in the dictionary. The nonsense word is a non-lexical vocabulary. They may be contrasting merely in stress location and extensively approved in earlier investigation on stress perception (Lieberman, 1960; Adams, 1979; Sereno & Jongman, 1995; Nguyen et al., 2008). Several additional studies applied nonce words in the investigations with lexical stress perception and production (Guion et al. 2004, 2005; Davis & Kelly, 1997; Vitechvich et al., 1997). Nonce words are tabled with real word-pairs because this study is a cross-linguistic that study comprises subjects from two opposing language backgrounds. Actually, L2 learners and native speakers may possibly vary in their knowledge with real English words which might affect their stress decisions in a clear manner. Therefore, to reduce the disparity in knowledge and probability in perceiving lexical stress on a real English stimuli, we could recourse to using nonce words which are novel to native and non-native speakers. The nonce word stimuli also complied with the permissible rules of English words and syllable structures so that they sound natural.

#### **5. Quantity Sensitivity Stress**

Quantity sensitive stress indicates that lexical stress placement is restricted to heavy syllables in many languages. This pattern is also acceptable even if they are followed by a neighbouring stressed syllable (Munro & Ulrich, 1984; Munro & Willmond, 1994; Gordon, 2004). That is to say, it is possible and permissible to find a sequence of stressed syllables in polysyllabic words. Generally speaking, languages are either sensitive or insensitive to syllable quantity. Abu Salim (1982) confirms that the peculiarity between heavy and light syllables is invisible in quantity insensitive languages because both syllables are accounted equally. Pearl (2009) supports this fact by declaring that syllables are characterized by homogenous syllable class in a QI analysis. In a quantity insensitive language, the stress rules are planned without reference to syllable weight difference, for example, French. Besides, the syllable weight has a strong impact in determining stress location in quantity sensitive languages for example, German; English in addition to Arabic are all examples of quantity sensitive languages, that is, the heavy syllable receives the primary stress.

#### **6. Heavy Syllables**

In general, the weight of syllables is classified into two sets, heavy and light syllables. English fits the pool of stress language, and it is extensively accepted that word stress is grouped by syllables. To group these two sets, there should be two factors; one is constructed on the syllabic division, and the other is moras (Hayes, 1995). Syllabic division could be clarified by two theories: CV Theory, and X Theory. However, Hayes states that X Theory is superior to researchers as it may apparently display the organization of syllables established on the higher nodes. In terms of syllables' classification if a syllable has a branching rhyme, it is regarded as a heavy syllable; to be precise, a rhyme comprises as a minimum two classifications (Hogg & McCully,

1987; Hayes, 1995) and for long vowels, one division encompasses two spaces. Besides, mora is the other approach to assess heavy or light syllables. As stated by Hayes (1989) Mora has a dual part in the theory; the major part is the obvious difference between light and heavy syllables, that is, a heavy syllable has two moras whereas a light syllable has one mora and the second is the phonological location.

## **7. Lexical Stress**

Laver describes lexical stress (word-stress) as “the placement of phonological stress on a particular syllable within a word”, and which is also “a defining property of that word” (1994: 511). In languages like French, Finnish, Hungarian, Polish and Latin, the location of stress within the word is fixed and it is specified by the phonetic technique of the group. The last syllable is always stressed in French and Polish and the first syllable is stressed In Hungarian, Finnish and Czech while in Latin, the position of stress is on the penultimate or the antepenultimate, depending on the quantity of the penultimate syllable. Stress in English language is not predictable in the sense that there are various positions of stress in a given word while in Arabic stress is predictable and it is not phonemic. Thus, it depends on a syllable weight whether it is light or heavy syllables.

## **8. Syllable Weight**

Linguists have detected that many languages determine individual syllable categories as more important than others based on a given phonological condition (e.g. Jakobson, 1931; Allen, 1976). Additional phonological condition might possibly be weight-sensitive. For instance, in various tone languages, syllables vary with reference to the sort of tonal differences which they might support the identification method. Therefore, whereas maximum languages permit level tones on all syllable categories, several limit contour tones to particular heavy syllables (McCarthy & Prince, 1986, 1995). Accordingly syllable weight has an impressive impact in the phonological theory. Two illustrations of weight which have extended an extensive recognition in phonological theory are skeletal slot models, comprising CV and X Slot Models (McCarthy, 1979; Clements & Keyser, 1983; Levin, 1985, Hyman, 2003) and Moraic Models (Hayes, 1989).

## **9. Modern Standard Arabic (MSA)**

Holes (2004) defines Modern Standard Arabic as the modern descendant of Classical Arabic and sometimes it is called Modern Literary Arabic (MLA) because no change occurs in the fundamentals of its syntax but a great and continuous change in its vocabulary and phraseology. It is considered as a neutral language or variety since it just reveals that the speaker is an Arab, whereas the regional, local and sub-local varieties reveal many characteristics of the speaker’s identity such as nationality, ethnicity, religion, social status etc. Holes explains how Arabs can solve certain situations of misunderstanding because of differences in varieties by using MSA to simplify conversations to ensure smooth communication (Holes, 2004). Ferguson

(1959:234) has categorized the standard Arabic into two main varieties: fuṣḥa as a 'high' variety and the colloquial as a 'low' variety.

#### **10. Baghdad Iraqi Arabic**

Blanc (1964) defines Baghdad Arabic as a dialect which is characterized by three well defined dialects, each associated with a confessional group as Christian, Jewish, and Muslim Baghdadi. The dissimilarities were fairly outstanding. Muslim Baghdadis, for example, usually pronounced the "qaaf" as /g/, while Christian and Jewish Baghdadis pronounced it as /q/, as in Modern Standard Arabic. Baghdad has developed enormously, it now comprises great settlements of Iraqis with different roots and dialects from all over the country. The features of these dialects have now been considered as geographical variations. For instance, the /q/ that was previously associated with Jewish Baghdadis is now assumed to be typical of Arabic in Mosul. The northern Iraqi dialects are historically close to the Baghdadi Christian and Jewish varieties (i.e. they all had /q/ rather than /g/). This is the nature of Baghdadi Arabic and Arabic everywhere in the Arabic-speaking world, most outstandingly in urban areas where populations of different social backgrounds and geographical origins living in the same area.

#### **11. English as Second Language (ESL)**

ESL refers to learners who acquire English while living in a community where English is extensively used and spoken as a second language like Singapore, and Malaysia (Richards et al., 1985).

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