



Speech Intelligibility: A Study of Iraqi EFL Learners' Accented English

Majid Rasim Younus

**A Thesis Submitted in Partial Fulfilment of the Requirements of the
University of London Metropolitan for the Degree of Doctor of Philosophy**

July 2020

ABSTRACT

Intelligibility refers to a targeted pronunciation level in English which enables non-native English speakers to produce and understand English speech uttered by both native and non-native English speakers (Abercrombie, 1949; Gimson, 2001; Cruttenden, 2014; Munro and Derwing, 2006; Levis, 2016). Instead of pursuing perfect mastery of English pronunciation, most researchers recommend intelligibility as an achievable and practical pronunciation goal (Gimson, 2001; Quirk, 1990; Jenkins, 2000; James, 2014). Although intelligibility is currently the focus of pronunciation studies and classroom instructions, it has not been applied in the Iraqi EFL classrooms and pronunciation research (see Al- Juwari, 1997; Ahmed, 2000; Mahud, 1998; Rashid, 2009; Khudhair, 2015; Al- Abdely and Thai, 2016; Al-Owaidi, 2017). The theoretical assumption of the study is that an intelligibility level of universal validity for EFL learners is best achieved when speech performance in English is based on a native English speakers' pronunciation model, namely Gimson's (2001) Minimum General Intelligibility (MGI).

Applying a mixed methods approach, the present study investigates the productive and perceptive intelligibility of Iraqi EFL learners in relation to foreign accent and accent familiarity. Productive intelligibility refers to learners' English speech being understood by others. This is determined by a production intelligibility test. By contrast, perceptive intelligibility refers to the ability of learners to understand native and non-native English speech. This is determined by a perception intelligibility test. The study measures the above two aspects of intelligibility, identifies which aspects of foreign accent and accent familiarity most negatively affect intelligibility and determines the various strategies these learners use to overcome intelligibility failure.

The overall quantitative analysis shows that Iraqi EFL learners are intelligible at the speech production and perception levels. However, these two aspects of intelligibility are negatively affected by the existence of segmental phonemes in English and Arabic that have no counterpart in the other language and by unfamiliarity with the speaker's accent. The qualitative analysis identifies several segmental phonemic contrasts of a high functional load which are responsible for intelligibility failure and a list of strategies which the Iraqi EFL learners employ to overcome these failures.

Based on the above findings and the nature of the pronunciation problems involved, the study suggests an intelligibility approach to the teaching of pronunciation for Iraqi EFL classrooms. The study concludes with a description of the research implications and applications that derive from the findings of the study.

DEDICATION

To

The Exalted Souls of

My Late

Father and Brother

with Everlasting Gratitude

TABLE OF CONTENTS

ABSTRACT	ii
DEDICATION	iv
TABLE OF CONTENTS	v
LIST OF TABLES	ix
LIST OF FIGURES	x
ACKNOWLEDGMENTS	xi
AUTHOR’S DECLARATION	xii
ABBREVIATIONS	xiii
CHAPTER ONE: INTRODUCTION	1
1.1. Introduction	1
1.2. My Personal Positioning	2
1.3. Topic of the Study	6
1.4. Aims of the Study	9
1.5. Research Questions	10
1.6. Significance of the Study	10
1.7. Context of the Study	11
1.7.1. The Education System in Iraq	11
1.7.2. The Teaching of English in Iraq	12
1.7.3. Iraqi Arabic	15
1.8. The Design of the Study	17
1.9. The Structure of the Study	17
1.10. Clarifying Terms	18
1.11. Summary	20
CHAPTER TWO : CURRENT PRACTICES IN THE TEACHING OF PRONUNCIATION	21
2.1. Introduction	21
2.2. Pronunciation Status: Past and Present	22
2.3. Approaches in the Teaching of Pronunciation	27
2.3.1. The bottom up, the top down and the interactive approaches	28
2.3.2. The intuitive- imitative, the linguistic-analytic and the integrated approaches	29
2.3.3. An intelligibility-based approach to the teaching of pronunciation	31

2.4. Pronunciation Materials in the Iraqi EFL Context	32
2.5. Beliefs Regarding the Teaching of Pronunciation	34
2.6. Summary and Conclusion	37
CHAPTER THREE: LITERATURE REVIEW.....	38
3.1. Introduction.....	38
3.2. The Concept of Intelligibility	38
3.3. Gimson’s (2001) Intelligibility Pronunciation Model.....	41
3.3.1. The segmental content of Minimum General Intelligibility (MGI).....	44
3.4. Jenkins’ (2000) Lingua Franca Core.....	46
3.5. Lingua Franca Core (LFC) or Minimum General Intelligibility (MGI)	49
3.6. Factors Influencing Intelligibility	54
3.6.1. Foreign accent and intelligibility studies	55
3.6.2. Accent familiarity and intelligibility studies.....	66
3.7. Principles of Language Learning	71
3.7.1. Contrastive analysis hypothesis.....	71
3.7.2. Interlanguage.....	73
3.7.3. Functional load.....	73
3.7.4. Communication strategies (CSs)	77
3.8. The Segmental Phonemes of Iraqi Arabic and English.....	81
3.8.1. Iraqi Arabic and English consonants.....	81
3.8.2. Iraqi Arabic and English vowels	86
3.8.2.1. Iraqi Arabic and English monophthongs	87
3.8.2.2. Iraqi Arabic and English diphthongs.....	89
3.9. Speech Production and Perception Theories.....	91
3.10. Exploring Gaps in Knowledge	95
3.11. Summary and Conclusion	97
CHAPTER FOUR: METHODOLOGY	102
4.1. Introduction.....	102
4.2. Research Questions.....	102
4.3. Epistemology and Research Design.....	102
4.4. Mixed Methods Research: Rationale and Limitation.....	105
4.4.1. Methodological Triangulation	106
4.5. The Process of Quantitative and Qualitative Research.....	107
4.5.1. The Speech Intelligibility Test	108

4.5.1.1. The Production Intelligibility Test	108
4.5.1.2. The Perception Intelligibility Test.....	110
4.5.2. The Speaking Task.....	112
4.6. The Pilot Study	113
4.6.1. Timeline of the pilot study.....	113
4.6.2. Participants in the pilot study	114
4.6.3. Recording and transcription of the pilot study	116
4.6.4. Reflection on the pilot study.....	117
4.7. The Main Study.....	118
4.7.1. Timeline of the main study.....	118
4.7.2. The production intelligibility test	120
4.7.2.1. Selecting the participants	120
4.7.2.2. The conduct of the test.....	123
4.7.3. The perception intelligibility test.....	124
4.8. The Speaking Task: Recording and Transcription	125
4.9. Data Analysis	126
4.9.1. Analysis of the Speech Intelligibility Test.....	126
4.9.2. Analysis of the Speaking Task	126
4.9.2.1. Qualitative Content Analysis	127
4.10. Validity and Reliability of the Speech Intelligibility Test	129
4.11. Trustworthiness of the Research	130
4.12. Transcription Issues.....	132
4.13. Ethical Issues	133
4.14. Summary and Conclusion	134
CHAPTER FIVE: RESULTS AND DISCUSSION.....	136
5.1. INTRODUCTION.....	136
5.2. Quantitative Results of the Study	137
5.2.1. Productive intelligibility results.....	137
5.2.2. Perceptive intelligibility results	143
5.2.3. Correlation results	149
5.2.4. Summary of the Quantitative Results	152
5.3. Qualitative Results of the Study	155
5.3.1. The Functional load of phonemic contrasts.....	155
5.3.1.1. Functional load in monophthongs	156

5.3.1.2. Functional load in diphthongs	162
5.3.1.3. Functional load in consonants	164
5.3.2. Communication strategies.....	167
5.3.3. Summary of the qualitative results	176
5.4. Discussion of the Results	177
5.4.1 Research question one	177
5.4.2. Research question two	181
5.4.3. Research question three	184
5.5. Summary and Conclusion	186
CHAPTER SIX: CONCLUSIONS AND IMPLICATIONS.....	188
6.1. Introduction.....	188
6.2. Outline of the Thesis	188
6.3. Summary of the Findings	188
6.4. Pedagogical Implications of the Study	190
6.5. Contributions of the Study	193
6.6. Limitations of the Study	196
6.7. Suggestions for Further Research	197
6.8. Final Comment.....	197
6.9. The researcher’s Reflections	198
References	200
Appendices.....	219
Appendix A: A document showing that the GTM was used in Iraq since 1938.....	219
Appendix B: 5th preparatory student book showing no focus on pronunciation.....	220
Appendix C: Pronunciation material for 1st and 2nd year university students in Iraq.....	220
Appendix D: Speech Intelligibility Test	223
Appendix E: The transcription used in the production intelligibility test.....	224
Appendix F: Phonemic transcription of the reading passage.....	224
Appendix G: The listening text and its phonemic transcription	225
Appendix H: The transcription used in the speaking task.....	225
Appendix I: Consent Form	228
Appendix J: Research Ethics	229
Appendix K: Travel Permission for Data Collection.....	232

LIST OF TABLES

Table 2. 1. Phases of pronunciation status.....	27
Table 2. 2. Summary of pronunciation approaches in Iraq.....	32
Table 3. 1. Summary of the definitions of intelligibility	40
Table 3. 2. Gimson’s (2001) MGI	46
Table 3. 3. Targets of the EFL and the EIL pronunciation syllabus	48
Table 3. 4. Rank ordering of RP phonemes	76
Table 3. 5. Tarone’s communication strategies (1977, cited in Krebt, 2010: 38)	80
Table 3. 6. Comparing consonants in MGI and IA.....	85
Table 3. 7. Comparing monophthongs in MGI and IA.....	89
Table 3. 8. Comparing diphthongs in MGI and IA.....	91
Table 4. 1. Timeline of the pilot study.....	114
Table 4. 2. Timeline of the main study	119
Table 5. 1. The overall productive intelligibility of Iraqi EFL learners	138
Table 5. 2. The intelligibility of identical phonemes	139
Table 5. 3. The intelligibility of partially similar phonemes	140
Table 5. 4. The intelligibility of different phonemes	141
Table 5. 5. Production intelligibility among the three difficulty levels	142
Table 5. 6. Scheffe test among the three difficulty levels.....	142
Table 5. 7. Overall perceptive intelligibility of Iraqi EFL learners	144
Table 5. 8. Matched accent familiarity	145
Table 5. 9. Mismatched accent familiarity.....	145
Table 5. 10. Unfamiliar English speaker	146
Table 5. 11. The means differences of perceptive intelligibility	147
Table 5. 12. Scheffe test among the three English speakers.....	147
Table 5. 13. Correlation between productive and perceptive intelligibility	149
Table 5. 14. Identical phonemes and matched accent.....	150
Table 5. 15. Partially similar phoneme and mismatched accent.....	151
Table 5. 16. Different phonemes and unfamiliar accent.....	152
Table 5. 17. Summary of quantitative findings.....	154
Table 5. 18. Phonemic deviations in English vowels.	165
Table 5. 19. Functional loads of English phonemic contrasts	166

LIST OF FIGURES

Figure 3. 1. Concentric circles of English.....	49
Figure 3. 2. The analytical frame of the research	101
Figure 4. 1. Epistemological framework and research design	104
Figure 4. 2. Population, sub-populations and sample used.....	120
Figure 4. 3. Triangulation of data collection.....	130

ACKNOWLEDGMENTS

I am greatly indebted to my lead supervisor Dr Ahmad Nazari whose insightful comments, constant support and friendly attitude have enabled me to carry out this work. My indebtedness is also extended to my co-supervisor Dr Klaus Fischer for his very helpful comments and continuous support. Without their guidance and encouragement, I would not have completed this thesis.

I am also grateful to the Ministry of Higher Education and Scientific Research (Iraq) / University of Baghdad for granting me the scholarship to pursue my higher studies and to the Martyrs Foundation (Iraq) for the financial support they have provided me throughout the period of my study.

Special thanks go to Dr Raad Al-Zaidi and Dr Khalid Jasim / University of Baghdad (Iraq) for their advice on the statistical aspect of the study. I also thank the following people for their help, Dr Dhea Mizhir, Dr Khaild Sharhan and Dr Rasim Tayeh. I extend my thanks to the Iraqi university students for providing the speech data for this study.

Finally, words of love and sincere gratitude are due to my mother, my brothers, my sisters, my wife and my two children: Yasir and Hasan.

AUTHOR'S DECLARATION

I hereby certify that all the material in this thesis represents my own work. In addition, whatever I have cited or paraphrased has been mentioned in my reference list.

Signature: MAJID YOUNUS

Date:

ABBREVIATIONS

AF	Accent Familiarity
ALM	Audio-lingual Method
CA	Contrastive Analysis
CLT	Communicative Language Teaching
CS	Communication Strategies
ELF	English as a Lingua Franca
ET	Exemplar Theory
FA	Foreign Accent
FL	Functional Load
GA	General American
GTM	Grammar Translation Method
IA	Iraqi Arabic
LFC	Lingua Franca Core
MGI	Minimum General Intelligibility
MSA	Modern Standard Arabic
MT	Motor Theory
PAM	Perceptual Assimilation Model
PME	Perceptual Magnet Effect
RP	Received Pronunciation
SAA	Speech Accent Archive
SLM	Speech Learning Model

CHAPTER ONE: INTRODUCTION

1.1. Introduction

People exchange their ideas through verbal and non-verbal means of communication (Rubin,1994:30). Ying Zhang and Elder (2011:43) state that verbal communication in a foreign language is more important than communicating in reading and writing. To achieve this competency in spoken English for EFL learners, Kenworthy (1987:13) emphasises that “the goal of a language teacher should not be a native-like pronunciation. He should rather make sure that the students’ speech is understood by others, in other words, that it is intelligible.”

The present study investigates the productive and perceptive intelligibility of Iraqi EFL learners in relation to foreign accent and accent familiarity. In this study, productive intelligibility is related to the production of the segmental aspect of foreign accent in accordance with the pronunciation features set by Gimson’s (2001) Minimum General Intelligibility (MGI) model. By contrast, perceptive intelligibility refers to EFL learners’ ability to understand the literal meanings of English words and utterances produced by native and non-native English speakers (James, 2014: 212; Gimson, 2001:298). Conceptualised within the intelligibility construct, this definition is an updated version of speech perception. In related studies, the term speech perception was used in relation to the recognition of the phonetic properties of utterances (Field, 2005: 401). Following Voss (1984, cited in Albashir, 2008: 24), the researcher extends the term perception in intelligibility research to include three components: phonetic, linguistic and meaning components. In this respect, the term perception will no longer be tied to the recognition of the phonetic properties of the spoken words by the listener. The listener can use his phonetic, linguistic and lexical knowledge to understand the literal meanings of the spoken English utterances. To the best of my knowledge, this interpretation of speech perception within intelligibility and the scope of the meaning emphasised have not been investigated within a clearly specified methodology. In this study, the perceptive intelligibility of Iraqi EFL learners is measured by a perception intelligibility test using a five-point Likert scale which is a mixture of Browne’s (2016) and Cruz’s (2003) rating scales, whereas the productive intelligibility of Iraqi EFL learners is measured by a production intelligibility test based on Gimson’s (2001) MGI (see sections 3.2 and 4.5.1 for further information).

Based on the Literature Review Chapter, two intelligibility models are suggested for EFL learners: Jenkins' (2000) Lingua Franca Core (LFC) and Gimson's (2001) MGI. The LFC is a non-native English speaker-based intelligibility model. It is mainly intended for the international use of English among EFL learners or what Jenkins prefers to call them non-bilingual English speakers. By contrast, MGI is a native English speaker-based intelligibility model. It emphasises that an intelligibility level of universal validity for non-native English speakers is best achieved when speech performance in English is based on native English speakers. This means that when a pronunciation model is based on native English speakers, EFL learners will be intelligible to both native and non-native English speakers rather than to EFL learners only (see section 3.5 for details).

By investigating the productive and perceptive intelligibility of Iraqi EFL learners' in relation to foreign accent and accent familiarity, this study combines pronunciation research in Iraq with up-to-date theoretical principles and research practices in English pronunciation. This introductory chapter will start by presenting the researcher's personal positioning regarding undertaking this research. This is followed by sections related to the topic of the study, the aims, the research questions, the significance, the context of the study, the methodology and the general structure of the thesis.

1.2. My Personal Positioning

In this section, I will explain how I came to choose the research area, the topic of my thesis and the research questions. I will provide a summary of myself, role, teaching experience and motivation to undertake this research based on my personal positioning. As a high school student, I had a strong motivation towards learning the English language. Like many other Iraqi students, I hoped that learning English would help me secure a better job and uncover the knowledge, cultures and beliefs of people in the outside world. That strong motivation led me to enrol with the Department of English at the College of Education for Human Science (Ibn Rushd) - University of Baghdad. Although I could have specialised in other areas of knowledge, I chose English as my future teaching career. At all the Colleges of Education in Iraq, the primary aim of teaching English is to prepare students to be teachers of English. Therefore, I studied English textbooks on linguistics, literature and methods of teaching. My first encounter with textbooks devoted to the teaching of English pronunciation was in the first

and second year of my university study. During these two years, I received intensive pronunciation instructions and practices. All the pronunciation teachers wanted us to produce English pronunciation perfectly and have explicit knowledge of the sound system of the English RP accent. Although we achieved good theoretical knowledge of pronunciation, no one of us ever reached that desired perfection in mastering the English RP accent. I still remember the various techniques which our teachers employed. While these enhanced our knowledge about pronunciation, they did not help us much in producing the English target sounds perfectly. For example, a teacher used to hold a paper in front of his mouth to demonstrate how the aspiration of plosives should be produced. Another teacher asked us to touch our larynx to perceive the voiced and voiceless distinctions of sounds. Also, the teachers went to extremes to demonstrate how, under certain phonotactic constraints, a long vowel should be produced shorter than its usual length. I believe that unsuccessful first experience of failing to achieve an unrealistic goal was the main reason why few Iraqi students specialised in phonetics and phonology. Although I never accomplished that goal myself, I chose the area of pronunciation due to my interest and the influence of my postgraduate teacher and MA supervisor the late Dr Khalil I. Al-Hamash.

At that time, I realised that there was an implicit agreement between teachers and students that perfection in RP was difficult if not impossible to achieve. However, there was a contradiction between that shared ideological belief of not being able to achieve RP pronunciation and actual teaching practice. In my opinion, the mismatch between the above belief and practice could be related to two main reasons. The first reason was the absence of a well-recognised alternative pronunciation principle to replace perfection in mastering the sound system of the English RP accent. The second reason could be related to cognitive dissonance. This means that knowing on one level that something is impossible is compatible with believing it being possible if one tried hard enough. In this sense, adhering to the goal of perfection could be resolved by constant 'listen and repeat' practice. Thus, as a student, I developed three misconceptions regarding pronunciation. First, I should acquire a perfect mastery of English pronunciation. Second, my pronunciation should be based on the sound system of RP only. Third, any other pronunciations deviating from the rules set by RP were incorrect.

Up to the time of commencing my PhD study at London Metropolitan University, I have been teaching English at different Colleges in Iraq and Libya. After I received my MA degree in English language and linguistics, I secured a part-time job as a university teacher in Libya

through the Libyan Cultural Attaché in Baghdad (from 2001 to 2008). After 2009, I was appointed as a full-time university teacher at the College of Education in Iraq by the Iraqi Ministry of Higher Education and Scientific Research. My teaching experience of English pronunciation in Iraq was significant in two ways. First, I realised that a perfect mastery of English pronunciation was impossible to achieve for Iraqi EFL learners simply because of language transfer. This means that the learner's native language is the main source of interference on learning the pronunciation of the target language. This interference can be either negative or positive. As an example of a negative interference, Iraqi EFL learners have trouble in producing the English phoneme /p/ because this phoneme does not exist in Iraqi Arabic. These learners tend to substitute it with the Iraqi Arabic /b/ phoneme. A positive interference occurs in cases where the English phonemes have their counterparts in the learners' mother tongue such as the existence of the phonemes /m/ and /i:/ in both English and Arabic.

The second significance of my teaching experience was related to the pronunciation textbooks used in Iraq which used the audio-lingual method (see section 2.4 for details). At that time, the pronunciation textbooks emphasised perfection in the mastery of one native English variety, the English RP accent. These textbooks provided detailed phonetic and phonological explanations of English speech sounds. The emphasis on mastering the sound system of the RP accent was reflected in the type of pronunciation practice encouraged to be used in the Iraqi EFL classrooms as well as the pronunciation research conducted by Iraqi researchers (see Al-Owaidi, 2017; Al-Abdely and Yap, 2016).

As a teacher, the challenge which I experienced was how to mitigate the demands of the textbooks and the reality of learners' English. This was a frustrating task since neither myself as an EFL teacher nor my students will ever reach perfection in English pronunciation. It was at that time of my teaching career where I felt that the gap between the two should be bridged. However, I did not have a recognised alternative pronunciation principle to replace the existing one. Like other Iraqi teachers, I was engaged in enforcing pronunciation habits by constant listen and repeat practice. It was only when I started developing my tentative PhD proposal that I came across the concept of intelligibility as the only pronunciation principle which could soften the gap between the performance of Iraqi EFL learners and the demands of the prescribed textbooks.

In addition to my teaching experience, I completed several teacher training workshops held inside Iraq and the United States of America (Georgia and Arizona State Universities)¹. These workshops were sponsored by the US Embassy in Baghdad. They concentrated mainly on the Communicative Language Teaching (CLT) as the best available approach to the teaching of English at school and university levels in Iraq. Although the lecturers employed various communicative activities to teach different aspects of English, to my and possibly the reader's amazement they never once referred to the teaching of pronunciation. Also, the lecturers expressed their dissatisfaction with the English textbooks used in Iraq which were mainly based on the Audio-lingual Method (ALM). These American lecturers pointed out frequently that the English textbooks should be revised. Eventually, the revision took place when all the locally produced English textbooks used at the primary, intermediate and secondary schools were changed in accordance with the CLT approach. However, a similar radical change did not happen at the university level due to copyright issues (see section 1.7.1).

Besides the previously mentioned unresolved gap between the learners' performance in English and the demands of the textbooks, pronunciation teachers in Iraq were required to adopt the CLT approach in the teaching of pronunciation. This point raises the issue that the problems of teaching English pronunciation in EFL contexts will remain unresolved if the intelligibility principle has not been introduced. Hence, undertaking this research is vital to the teaching of pronunciation in Iraq. Besides my training experience, I completed an eight-month English language course in the EF School at Cambridge. These workshops and the language courses undertaken in English speaking contexts revealed to me that communication success in English required more exposure to different native and non-native English accents and not only RP. People from different first language backgrounds communicated with one another in English, each producing English with features from his or her own accent. What the above experience revealed to me was that teaching English should not be associated with the prestigious English RP accent only, which is the common practice in Iraq. Rather, the teaching of pronunciation in Iraq should adopt the features of this global use of English into the Iraqi EFL classrooms.

The above accounts of my study, training and teaching experience helped me develop my research questions in several ways. First, I was aware of the influence of the learners' native language on learning the target language. Second, I was aware of the fact that EFL learners in

¹ Advanced teacher training program (Arizona State University, April 2011) and Summer 2012 professional development workshop (Georgia State University, July 2012).

Iraq were exposed to one variety of English in the classroom only, besides the Iraqi English accent. As I explained earlier, my role as a pronunciation teacher was to bring my students to a pronunciation level where they could produce and understand English in the present global context of English. Thus, I found it important to investigate intelligibility in relation to foreign accent as a speaker characteristic and accent familiarity as a listener characteristic. Hence, my research questions emerged (see section 1.5).

To summarise, the conflict between the curriculum and textbook demands on the one hand and the reality of my teaching situation on the other as well as experiencing alternative approaches to teaching pronunciation in my professional development have motivated me to embark on research on intelligible pronunciation of Iraqi Arabic native speakers and how this can be taught.

1.3. Topic of the Study

When learning English, non-native English speakers are expected to produce and understand English speech uttered by both native and non-native English speakers. To achieve this aim, they need to learn new distinctive sound features, acquire new articulatory habits and create new sound categories. Failure to achieve these articulatory and auditory adjustments will result in a type of English identified as foreign accented English (Serenio et al.,2016:3). Derwing and Munro (2005:385) state that accented English is the result of the phonetic and phonemic sound differences between a native language and a foreign language.

The investigation of foreign accented English speech varies among researchers depending on the pronunciation principle adopted, namely the nativelikeness principle² or the intelligibility principle (Levis, 2005:369). The nativelikeness principle emphasises perfection in mastering the sound system of the English RP accent (Fulcher, 2003:93). Proponents of the nativelikeness principle believe that the presence of a foreign accent in non-native English speech is the major cause of difficulty in sound production and perception (Munro and Derwing, 1995:74). Thus, the focus is on eliminating any traces of a foreign accent via the learning of the detailed phonetic and phonological features of the English RP accent (ibid). This strict adherence to

² All through this thesis, the term nativelikeness is used to mean perfection in mastering the sound system of English. This use of the term is in contrast to its use by the researchers who advocate a non-native English speaker's approach to intelligibility.

nativelikeness or perfection in English pronunciation is moderated by Abercrombie's (1949) introduction of his intelligibility principle. Contrary to the requirement of perfection or nativelikeness, the intelligibility principle suggests that non-native English speakers are not required to master the phonetic details of the English sound system to be understood. What these learners need instead is "a type of pronunciation which can be understood with little or no conscious effort on the part of the listener" (Abercrombie,1949:120). Kenworthy agrees with Abercrombie that a comfortably intelligible pronunciation is a "far more reasonable goal" (1987:3).

Based on the Literature Review Chapter, two intelligibility approaches to the investigation of accented English are identified: monocentric and pluricentric (Dziubalska-Kořaczyk and Przedlacka, 2008:11). Although both approaches aim to equip non-native English speakers with a comfortably intelligible pronunciation, they differ in terms of which pronunciation model to adopt, a native English speaker model or a non-native English speaker model (Hellmuth, 2014:297). The monocentric intelligibility approach is defined and explained with reference to the native English speaker. The approach is based on the theoretical belief that an intelligibility level of universal validity for non-native English speakers can best be achieved when it is based on native English speakers' pronunciation with a modified version of RP (Quirk, 1990; Glombek and Jordan, 2005, Gimson, 2001; Cruttenden, 2014).

By contrast, the pluricentric intelligibility approach is defined and explained from a non-native English speaker's perspective and holds that native English speakers' pronunciation is no longer valid in non-native to non-native interaction in English. The pluricentric approach claims that native English speakers have no unique role to play in the present global status of English. Non-native varieties of English should be recognised as institutionalised and legitimate varieties on their own. English is mostly used among non-native English speakers for international and intranational communication (Bolton and Kachru, 2006; Jenkins, 2000, 2009; Kirkpatrick, 2011). According to Jenkins, the international use of English among non-native English speakers should not rely on native English speakers' pronunciation norms. If native English speakers are included in such interactions, they should not represent a reference pronunciation model (2007:3). In a similar vein, Seidlhofer asserts that the nativelikeness criterion should not be applied in non-native to non-native interaction in English (2004:211). In the present study, a monocentric intelligibility approach is adopted. The present researcher concurs with monocentric intelligibility researchers that a single intelligibility model based

on native English speakers will be more internationally understood than the claimed pluricentric non-native English based model (see section 3.5 for further details).

In both the above two approaches, intelligibility is interpreted in two different senses. First, it refers to the mere production and recognition of the formal properties of speech sounds (Tajeldin Ali, 2011; Kirkova-Naskova, 2010; Field, 2005; Jenkins, 2000; Browne, 2016; Smith and Nelson, 1985). Second, intelligibility is defined in relation to understanding (Derwing and Munro, 2005, 2009; Munro and Derwing, 1995; Cruz, 2003; Sereno, Lammers and Jongman, 2016; Schoener, 2016; James, 2014). The present study applies the above two senses to investigate the productive and perceptive intelligibility of Iraqi learners in relation to foreign accent and accent familiarity (see section 3.2 for details).

Bearing this broad picture of intelligibility in mind and based on a review of pronunciation studies worldwide and in Iraq, the present researcher believes that most intelligibility studies worldwide adopt a structural approach when investigating intelligibility. The focus is on the production and recognition of sound contrasts in English in decontextualised discourses. Following Derwing and Munro (2005), the present study relates sound production and perception to the understanding of the literal meanings of words and utterances as they are used in context. This functional attitude towards intelligibility highlights the importance of functional load as an integral part of intelligibility research. The researcher argues that intelligibility research should be supplemented by functional load analysis to demonstrate the communicative values of English phonemic contrasts in maintaining communication (Brown, 1988). In this respect, Munro and Derwing emphasise that "what has been missing until recently is, first, a conceptualisation of intelligibility that assists teachers in setting priorities and, second, empirical evidence that identifies effective practices" (2011:317).

In the Iraqi EFL context, no serious attempt has been made to investigate Iraqi EFL accented English within the intelligibility construct. The bulk of pronunciation studies conducted in Iraq emphasises the perfect mastery of English RP accent, with intelligibility having been almost wholly ignored (Al- Juwari, 1997; Ahmed, 2000; Al-Haeri, 1973; Wadi, 1987; Al-Abdely and Thai, 2016; Hassan, 1981; Al-Azzawi and Barany, 2015; Rashid, 2009; Rashid, 2011; Al-Owaidi, 2017).

The present researcher believes that assessing Iraqi EFL learners' accented English based on the requirement of perfection in mastering the English RP accent will undoubtedly consider any phonetic and phonemic deviations as pronunciation errors impeding speech production and perception. As revealed by the Literature Review Chapter, most of the pronunciation studies conducted in Iraq assessed the Iraqi EFL students as incompetent. From the intelligibility perspective, such pronunciation assessment was inadequate because it was based on a pronunciation model which emphasised the learning of all the phonetic and phonological features of RP English, irrespective of the impossible learnability of these features and their importance for understanding. If the research findings in the Iraqi context were plausible, it would be difficult to justify that some of these students reached a speech performance level which made them teachers of English, English translators, students pursuing their higher education abroad and employees in native and non-native English institutions. Hence, the present study emphasises intelligibility over perfection or accuracy in English pronunciation.

A long time ago, the importance of the intelligibility principle was recognised by Abercrombie (1949:120) who wrote:

Is it really necessary for most language learners to acquire a perfect pronunciation? Intending secret agents and intending teachers have to, of course, but most other language learners need no more than a comfortably intelligible pronunciation (and by "comfortably" intelligible, I mean a pronunciation which can be understood with little or no conscious effort on the part of the listener). I believe that pronunciation teaching should have, not a goal which must of necessity be normally an unrealised ideal, but a limited purpose which will be completely fulfilled; the attainment of intelligibility.

1.4. Aims of the Study

The present study aims to measure the overall productive and perceptive intelligibility of Iraqi EFL learners, identify which aspects of a foreign accent and accent familiarity most negatively affect intelligibility and determine the types of strategies Iraqi EFL learners use to overcome intelligibility failure. To pursue the above aims, the following research questions are formulated.

1.5. Research Questions

1. To what extent is Iraqi EFL learners' speech production intelligible to native English speakers? Does foreign accent cause statistically significant variations in productive intelligibility scores?
2. To what extent is English speech intelligible to Iraqi EFL learners? Does accent familiarity cause statistically significant variations in perceptive intelligibility scores?
3. Is there any relationship between the productive intelligibility and the perceptive intelligibility of Iraqi EFL learners?

1.6. Significance of the Study

The study is significant in that it sets a new practical and achievable goal of competency in English pronunciation for Iraqi EFL learners in line with Gimson's (2001) MGI, which is a modified version of RP (Cruttenden, 2014). This native English based intelligibility model is frequently mentioned in the literature (Tiffen, 1974; Jenkins, 2009; Munyandamutsa, 2005; Levis, 2005; Atechi, 2004; Browne and Fulcher, 2016). However, it has not been applied to the Iraqi context. In both aspects of intelligibility, MGI emphasises the learning of pronunciation features which promote understanding rather than pronunciation accuracy (Gimson, 2001:298). In this intelligibility approach, understanding is associated with "the accessibility of the basic, literal meaning, the propositional content encoded in an utterance" (James, 2014:212).

The study also emphasises the communicative value of English phonemic contrasts produced by Iraqi EFL learners as investigated through the principle of functional load (FL). FL emphasises that the communicative value of pronunciation errors is more important to communication than the frequency count of such errors (Brown, 1988:601; Levis, 2016:429). Based on the principle of FL, the present study has identified several segmental phonemic contrasts arranged hierarchically in terms of their communicative value according to Brown's (1988) list of segmental phonemic contrasts. These phonemic contrasts can be incorporated into Iraqi EFL classrooms to enhance Iraqi EFL learners' productive intelligibility.

Furthermore, the significance of the study lies in confirming the effect of accent familiarity in understanding English in its international context. Based on this, it is recommended that Iraqi EFL learners should be exposed to various native and non-native varieties of English in the classrooms. Finally, the study proposes an intelligibility approach to the teaching of pronunciation in the Iraqi EFL context. It is hoped that the findings of the study will draw the attention of teachers, textbook writers and policy makers in education to the importance of adopting intelligibility as the pronunciation goal into the Iraqi EFL classrooms.

1.7. Context of the Study

This section addresses three issues in the Iraqi EFL context relevant to the present investigation: the Iraqi education system, the teaching of English in Iraq and the Iraqi Arabic dialect. A brief description of the education system in Iraq is given. The teaching of English will be examined in terms of developments and expected outcomes and Iraqi Arabic will be discussed as the spoken variety from which Iraqi EFL learners transfer their pronunciation features into the target language (Aziz, 1976: 254; Rahim,1980).

1.7.1. The Education System in Iraq

The education system in Iraq is divided into public and private sectors. This study focuses on the public sector because it is more popular and it is fully controlled by the Iraqi government, which supports the public education by providing books, teaching aids and free student accommodation. The Iraqi education system is run by two government authorities which are responsible for policy-making and supervision. These two authorities are: the Ministry of Education and the Ministry of Higher Education and Scientific Research. The Ministry of Education is responsible for primary, secondary and vocational institutes, including teacher training institutes. The Ministry of Higher Education and Scientific Research is responsible for the administration of universities. For all levels of education, the academic year runs from September until June (Issa and Jamil, 2010:365).

At the base of the hierarchical structure of the education system in Iraq is pre-school education in the form of nurseries. Nurseries are for children aged four and five, and children attend for two years. This learning level is followed by primary education which is for children aged six to twelve, so it lasts for six years. At this level, education is compulsory. The pupils finishing

it successfully are awarded with the Primary Certificate. Secondary education, which also lasts for six years, consists of two stages: intermediate and preparatory. Intermediate education is a continuation of the learning the pupils received in primary education but with more depth. Preparatory education, which prepares the pupils for vocational life or university study, is divided into two branches: scientific and literary. After completing this learning level, students can join university and specialise in different fields of knowledge. Following this, if they so choose, they can pursue higher education for a master or PhD (Issa and Jamil, 2010).

1.7.2. The Teaching of English in Iraq

The teaching of English in Iraq has been through two distinct phases: pre-2007 and post 2007. In 1970, a local Iraqi committee was formed by the Ministry of Education, and this published a series of eight English textbooks called the New English Course for Iraq (Al -Hamash, 1984:84). According to Altufaili (2016:10), the New English Course for Iraq came as a reaction against adopting English textbooks which were neither intended for Iraqi EFL learners nor reflected the social, religious and political aspects of the Iraqi society. Altufaili (ibid) maintained that the adopted English textbooks were written in Britain and oriented mainly towards ESL learners. By contrast, the New English Course for Iraq, written in 1970, reflected both the needs and the culture of Iraqi EFL learners. This new series covered the teaching of English from the 5th year of primary school till the end of secondary school. The lesson duration was 40 minutes, and there were six lessons per week. All these English textbooks were based on the Audio-lingual Method (ALM) and the Grammar Translation Method (GTM) and they adopted Standard British English (Al-Chalabi, 1976:41). The main skills that these textbooks aimed to develop were reading, writing, pronunciation, spelling and speaking. The textbooks reflected the fact that Iraq was an EFL context where native English speaker rules applied. Any deviation from native English pronunciation was considered incorrect and in need of immediate remedy (Al Abdely and Yap, 2016).

The New English Course for Iraq continued to be used until 2007. After 2007, the teaching of English in Iraq witnessed a dramatic shift in curriculum writing and English language training workshops. These workshops were intended to provide Iraqi EFL teachers with communicative teaching and learning materials regarding the English language. They were a new experience

for the Iraqi teachers. At school level, teachers had the chance to practise their English with native English speakers and to learn the teaching skills necessary to teach using the new English textbooks. For example, the Ministry of Education collaborated with Garnet Publishing Ltd to provide training for Iraqi teachers. Garnet conducted two training programmes that were sponsored by the Ministry of Education. The first one took place in Erbil in 2013 and the second was held in Beirut in 2013 (Altufaili, 2016:15). Altufaili (ibid:17) mentioned that these teacher training workshops employed expert British scholars to train the Iraqi school teachers.

At the university level, similar English language training workshops and collaborative programmes were encouraged with different universities in the US, the UK and Australia. This was done via collaborative teacher training programmes and providing scholarship funding for those attending these universities. For example, the US embassy in Iraq funded and supported many exchange programs and teacher training workshops for Iraqi teachers and professionals in and out of Iraq. An aspect of these programs was teaching English. For example, the Fulbright Foreign Language Teaching Assistant Program helped English teachers to develop their teaching skills, improve their English language proficiency and increase their awareness about American culture and customs. The Fulbright Visiting Scholar Program was another program for junior Iraqi teachers. It was designed to introduce new teaching and research methods, observe classes, attend seminars, and develop linkages with American faculty through weekly mentoring sessions (Altufaili, 2016). These workshops contributed to the development of the education system and the English language teaching in Iraq.

With respect to curriculum writing, the new government was aware of the importance of English in a globalised economy as Iraq was reopened up to the Western world and markets (Al-Hamdany, 2015:36). In this respect, the Ministry of Education in Iraq funded a project in which new English textbooks were imported from native English-speaking countries and enriched with local input to suit the Iraqi EFL context. These textbooks were specified for all schools in Iraq, starting from year three at primary level to the end of secondary school. This new series was called Iraqi Opportunities (ibid :35). The new Iraqi Opportunities series differed from the old English textbooks in the approach adopted. These new textbooks followed the Communicative Language Teaching (CLT) approach instead of the ALM and GTM of the old

textbooks (ibid). The aim of Iraqi Opportunities was to provide authentic materials and situations that would enable Iraqi EFL learners to engage in using the English language in realistic communicative situations. A couple of years later, a new series of English textbooks was introduced at the first year of primary school. The new English series was called English for Iraq (ibid) and it was published by Garnet Publishing Ltd. These developments in the school system were paralleled by similar developments in the university system. The university system also underwent ups and downs for reasons related to war and economic sanctions. However, positive steps were taken by the Ministry of Higher Education and Scientific Research to revive higher education in Iraq. In terms of materials development, the focus was on updating English materials in both departmental and non-departmental English³. Thus, several ministerial committees were formed to revise the current English materials. In 2012, an internal committee formed by the Ministry of Higher Education and Scientific Research took responsibility for developing English textbooks for non-departmental English classes⁴. Like the textbooks for primary and secondary education, the textbooks for university students were based on native English-speaking countries.

Despite the above positive attitude towards the teaching of English in Iraq, pronunciation instructions and research still adhere to the perfect mastery of the English RP accent (Al Abdely and Yap, 2016; Al-Owaidi, 2017). This has been evident in the types of pronunciation textbooks used at Iraqi universities and the nature of pronunciation studies conducted. This adherence to the RP accent in the Iraqi EFL context does not reflect the tremendous changes and current trends in pronunciation research. Intelligibility rather than perfect mastery of RP is now the focus of pronunciation teaching. Old concepts and models of pronunciation are now challenged in favour of newly driven intelligibility ones. Intelligibility emphasises the mastery of a pronunciation performance level which is good enough to be understood by listeners. It also encourages expanding the English teaching materials to reflect features from all varieties of English and not only RP (Gimson,2001; Brown,1988).

In the Literature Review Chapter, the reviewed pronunciation studies clearly reflected the international pronunciation scene. This was shown by the types of listeners such studies employed. Some studies used native American English listeners (For example, Kashiwagi and

³ Non-departmental English refers to the use of English in departments other than the Department of English. For example, English in the Department of Geography aims to provide the students with the English terminologies specific to Geography as well as the basic patterns and rules of English.

⁴ The researcher was a member of this committee.

Snyder, 2008; Nikolova, 2012; Field, 2005 and Cruz, 2003). Other studies used Australian and Canadian native English listeners such as Algethami (2011) and Munro and Derwing (2006), respectively. Some studies combined General American English and British English in their studies (Kirkova-Naskova, 2010). Furthermore, non-native English speakers were recruited in some studies as the only listeners employed to pass judgments on non-native English speech (For example, Bent and Bradlow, 2003; Jenkins, 2000). The latter scene emphasised that these non-native varieties of English should be regarded as legitimate varieties of English. In this respect, Kachru (1985) suggested that English should be spreading into three concentric circles: Inner Circle, Outer Circle and Expanding Circle. Similarly, Jenkins (2000) proposed her Lingua Franca pronunciation model for Expanding Circle speakers.

1.7.3. Iraqi Arabic

Throughout its history, Iraq went through several events which determined its population and the different languages spoken. To arrive at a better understanding of the uniqueness of the Iraqi Arabic dialect, a brief account will be presented on the geographical, historical and religious aspects of the country. The information is mainly based on Alsiraih's (2013). Iraq has borders with six countries: Turkey, Iran, Syria, Jordan, Saudi Arabia and Kuwait. The country is also referred to in the linguistic literature as Mesopotamia due to the two rivers which run through the country, the Euphrates and Tigris. The geographical location along with its agricultural environment were the main reasons which tempted people in the past to migrate and settle there. Although Mesopotamia witnessed advanced civilisations like Sumer, Akkad and Babylonia, it was the subject of numerous invasions and conquests throughout its history starting with the Arab conquest during 637-640 A.D. followed by the Mongols (in 1253), the Turks and Persians (16th, 17th, and 18th century), the Ottoman Turks (19th century) and the British during World War 1. In 1921, the country became a kingdom then it was declared a republic in 1958. After that, the country witnessed many conflicts and wars till 2003 which ended the ruling of the Ba'ath party. The above past events resulted in a diversity of communities, religions and languages flourished in the country (Alsiraih, 2013: pp 7-11).

As far as the language is concerned, various languages and dialects are spoken in Iraq. Until 2003, Arabic was the only official language in the country. Kurdish was then recognised as a second official language in Iraq. Other languages like Assyrian Neo-Aramaic and South Azeri have long been regarded as regional languages (Jastrow, 1994). In addition to these spoken

languages in Iraq, a local dialect is spoken throughout Iraq and that dialect is known as Iraqi Arabic (IA) or Mesopotamian Arabic. According to Versteegh (2001, cited in Alsiraih, 2013:156), IA developed in two stages of Arabicisation. The first stage was related to the early Arab conquest around centres like Basra and Kufa and the second was related to the influence of Arab tribes migrating from the peninsula. The present status of IA also contains some loan words borrowed from neighbouring languages like Persian and Turkish. However, most loan words came from English because of the British invasion and because English is the language of technology and communications.

Iraqi Arabic speakers also have two language varieties in common with other Muslims and Arabs: Classical Arabic and Modern Standard Arabic (MSA). The former is restricted to the recitation of the Holy Quran by Muslims only. It is taught for this purpose and used by religious preachers. This Arabic language variety is not spoken by Arab speakers in general. In contrast, Modern Standard Arabic is characterised by its wide use and understandability throughout the Arab speaking countries. It is used by the media, in education and for formal ceremonies. However, this variety is restricted to formal situations only (Ghalib, 1984). In line with this, Smith states that “there is a universal ‘pan-Arabic’ language, which is taught in schools, used by the mass media in all Arab countries, and for all communications of an official nature” (2001:195). The distinction between MSA and IA points out to a sociolinguistic phenomenon known as diglossia. Diglossia refers to the status where one person can switch between two different language varieties depending on the context of situation, formal or informal (Amer et al., 2011:9). Holmes and Wilson (2017:31) used the term diglossia “to cover any situation where two languages are used for different functions in a speech community.”

The most widely spoken variety in Iraq is IA, and this differs from one region to another. The most discussed dialectal difference is between the southern Gelet group and the northern Qeltu group (Mitchell, 1990:37; Rahim, 1980). The difference between the two dialects is mainly related to the number of Arabic lexical items which preserves the pronunciation of the Arabic phoneme /q/ rather than its variants /g/, hence the terms Qeltu and Gelet (Alsiraih, 2013:12).

In relation to the dialects spoken in Iraq, Rahim (1980:170) states that:

There are, in my view, three major dialects spoken in Iraq: (a) a southern Iraqi dialect represented by the speech of the inhabitants of Basrah (the second largest city), (b) a northern Iraqi dialect represented by the speech of the inhabitants of Mosul, and

(c) a dialect spoken in the central part of Iraq and represented by the speech of the inhabitants of Baghdad (the capital). Within the Baghdadi dialect, furthermore, there exist some regional variations basically in pronunciation, but these variations do not, in my opinion, affect the phonemic system of Baghdadi Arabic.

1.8. The Design of the Study

It has already been emphasised that intelligibility is the targeted performance level for non-native English speakers. In an EFL context, this level is the basic requirement for any communication success from the viewpoint of native English speakers (Gimson, 2001). In the present investigation, the researcher uses a mixed methods research approach. The rationale behind using the mixed methods approach is to validate and expand the quantitative results using qualitative data (Creswell and Plano Clark, 2007:62). Thus, the aim of the design is to validate and expand the quantitative results obtained from the speech intelligibility test with the qualitative data obtained from the speaking task. The qualitative analysis focuses on the functional load of phonemic contrasts and the use of communication strategies. A full discussion of the methodology used is presented in the Methodology Chapter.

1.9. The Structure of the Study

This thesis includes six chapters. Chapter one introduces the topic of the study, The researcher's personal positioning, the aims, the research questions, the significance and the methodology adopted. Chapter two presents current practices in the teaching of pronunciation. Chapter three reviews the literature on intelligibility and the theories on speech production and perception. Also, a contrastive analysis of the sound systems of English and Iraqi Arabic is given. Chapter four discusses the methodology of the study, describing its data collection tools and analysis, the sampling procedure, the pilot and the main administration of the study. Chapter five presents the quantitative and qualitative results and discussions. Chapter six is the conclusion chapter, which summarises the quantitative and qualitative findings and outlines the limitations of the study, its contributions and pedagogical implications.

1.10. Clarifying Terms

It is to be clearly stated that certain ambiguities arise when using linguistic terms. The variation in linguistic interpretations can arise from implementing different methodologies and carrying out research in different contexts. Therefore, researchers may create their own definitions to serve specific purposes or they may choose an already defined concept which is suitable for their investigation. The present study does not intend to create new definitions. Rather, it chooses, from several alternatives, working definitions for the study.

Intelligibility refers to a targeted pronunciation level in English which enables non-native English speakers to produce and understand native and non-native English speakers (Abercrombie, 1949; Gimson, 2001; Cruttenden, 2014; Munro and Derwing, 2006; Levis, 2016). In this study, the intelligibility of Iraqi EFL learners is investigated at the speech production and speech perception levels. For this purpose, the term productive intelligibility is used to refer to the accurate production of the English sound system in accordance with the segmental pronunciation features set by Gimson's (2001) MGI. By contrast, the term perceptive intelligibility refers to the understanding of the meanings of words and utterances as spoken by native and non-native English speakers. In pronunciation studies, the term understanding should not mislead the reader to place the whole study within the field of semantics. The use of the term understanding in its definition refers simply to the grasping of the literal meanings of words and utterances which is the third component of speech perception. At that stage of speech processing, the listener associates acoustic speech signals to specific lexical entries to derive the basic literal meanings of words and utterances. All other metaphorical or pragmatic meanings of words and utterances are excluded from the study (Jenkins, 2000; James, 2014; Derwing and Munro, 2005). In this respect, Voss (1984, cited in Albashir, 2008: 24) states that speech perception depends on three components: an acoustic component, a linguistic component and a content component.

Foreign accent refers to "the ways in which a foreign language speaker's speech differs from the local variety of English and the impact of that difference on speakers and listeners" (Derwing and Munro, 2009:476). In the present study, the effect of foreign accent on the productive intelligibility of Iraqi EFL learners is investigated at the segmental level. In this respect, Iraqi EFL learners' speech production is judged intelligible if it does not deviate too far from the pronunciation rules set by Gimson's (2001) MGI (see 3.3.1 for details on MGI).

Accent familiarity is “a speech perception benefit developed through exposure and linguistic experience” (Browne and Fulcher, 2016:39). In this study, the effect of accent familiarity on the perceptive intelligibility of Iraqi EFL learners is investigated across three levels: matched, mismatched and unfamiliar. These three levels were determined based on two criteria: linguistic experience and native language backgrounds (Bent and Bradlow, 2003). According to Bent and Bradlow (2003), matched accent familiarity refers to interlocutors who share the same native language, mismatched accent familiarity refers to interlocutors who have different first language backgrounds but significant linguistic knowledge with the target language and unfamiliar refers to the absence of accent familiarity. To measure perceptive intelligibility, the Iraqi EFL learners were asked to rate on a five-point rating scale their understanding of one English text spoken by three English speakers who represent the above three accent familiarity levels.

Received Pronunciation is a type of pronunciation used by educated native English speakers in south east England. This accent is usually described as a regionally neutral accent recommended for non-native English speakers (Crystal, 2008:404).

Minimum General Intelligibility is an intelligibility pronunciation model based on native English speakers. For an intelligibility level of universal validity, this model provides EFL learners with the basic phonemic distinctions in English to be acquired at the speech production level. At the speech perception level, the model emphasises that EFL learners should put an effort to fully understand accented English through the exploitation of the context of discourse and familiarity with the speaker’s accent (Gimson, 2001:298).

Communicative strategies refer to “learners' attempt to bridge the gap between their linguistic competence in the target language and that of the target language interlocutors” (Tarone 1981:288).

A native speaker of English refers to “someone whose main or first language (L1) is English and who has learned it first as a child” (Brown, 2013:8).

1.11. Summary

This chapter introduced the topic under investigation. It emphasised the fact that the concept of intelligibility is missing in the Iraqi EFL context. Thus, there is a need to update pronunciation studies in the Iraq EFL context to include the intelligibility principle in both research and classroom practice. The chapter also revealed the significance of adopting the functional load approach as a follow up to capture the communicative values of English segmental phonemic contrasts. A brief account was presented on the methodology of the study, including the research design adopted. A detailed discussion of the methodology will be given in the Methodology Chapter. This chapter also introduced the relevant information related to the context of the study. This included the education system in Iraq, teaching English in Iraq and the Iraqi Arabic dialect. Finally, a list of the main terms used in the study was presented and briefly defined. The next chapter presents current practices in the teaching of English pronunciation.

CHAPTER TWO : CURRENT PRACTICES IN THE TEACHING OF PRONUNCIATION

2.1. Introduction

The term pronunciation refers to the speech sounds which are produced by a speaker and perceived by a listener so that both can understand each other (Nunan, 2003:113). To distinguish pronunciation from phonology, Burgess and Spencer (2000:191) wrote that:

The phonology of a target language consists of theory and knowledge about how the sound system of the target language works, including both segmental and suprasegmental features. Pronunciation in language learning, on the other hand, is the practice and meaningful use of the target language phonological features in speaking, supported by practice in interpreting those phonological features in a target language discourse that one hears.

The above quotation shows that the term pronunciation refers to the production and perception of speech sounds which constitute the code of a language and differentiate between or contribute to meaning. These speech sounds are either segmental, they differentiate between meanings, or suprasegmental, where a contribution to meaning in addition to differentiation between meanings occurs. The term segmental refers to individual phonemes like consonants and vowels, whereas suprasegmental refers to features which extend over more than one segment like intonation, stress and rhythm (Ur, 2012:128). Despite its importance to oral communication and the development of the speaking and listening skills, the status of pronunciation within English language teaching methods varies between highly prioritised in one method and marginalised in another (Dalton and Seidhofer, 2001:57).

This chapter reviews current practices in the teaching of pronunciation in terms of pronunciation status, teaching approaches, the materials used, beliefs and pedagogical orthodoxies in and out of the Iraqi EFL context. The aim of the chapter is to provide a rich and useful context to the study and provide readers with better understanding of the importance and implications of this research. The chapter is divided into four sections. The first section reviews in a chronological order the status of pronunciation within the English language teaching methods. The second section concentrates on the various approaches used in the teaching of

pronunciation. The third section describes the pronunciation materials used at school and university levels in Iraq. The fourth section presents a review of current beliefs and pedagogical orthodoxies in the teaching of pronunciation.

2.2. Pronunciation Status: Past and Present

Based on my survey of the related literature, the role of pronunciation in relation to the teaching of English witnessed various ups and downs over the years. The rise and fall of pronunciation status were due to changes in language teaching methods and the status of English as an international language (see Jenkins, 2000; Gimson, 2001; Derwing and Munro, 2005; Murphy, 2003; Levis, 2018). This section concentrates on the role of pronunciation within the general language teaching methods. As far as the status of pronunciation within the international context of English is concerned, I will leave this to the next chapter, the Literature Review Chapter. In the coming chapter, intelligibility will be discussed in relation to the intelligibility approaches proposed by Jenkins (2000) and Gimson (2001). In this section, I chose to examine pronunciation status within three language teaching methods: Grammar Translation Method (GTM), Audio- Lingual Method (ALM) and Communicative Language Teaching (CLT). My decision was based on two main reasons. First, most of the English language teaching materials were based on these methods. Second, all the English textbooks used in Iraqi schools and universities were based on them (see, Altufaili, 2016; Abdul-Kareem 2009). The issue here is to examine whether pronunciation status in Iraq corresponds to the developments in pronunciation happening within the general language teaching methods or there is a time gap between the two. For a smooth narrative, the discussion will be presented in three-time duration following the approach used by Murphy (2003). Murphy (2003, cited in Fethi, 2017: 112-114) identifies three periods characterising the role of pronunciation in EFL contexts: from the 1940s to the 1960s, from the 1960s to the 1980s and from the 1980s and beyond. Each period related to pronunciation will be presented below and its relevance to the Iraqi EFL context is discussed.

1. From the 1940s to the 1960s

During this period, the teaching of pronunciation was affected by behaviourism as a theory of learning and structuralism as a theory of language. In this respect, de Bot et al. (2005:77) wrote that “structuralist linguistics provided tools for analysing language into chunks and behavioural theory provided a model for teaching any behaviour by conditioning.” For example, Lado

(1957) emphasised the role of contrastive linguistics to the study of language. By carrying out a contrastive analysis between two languages, researchers can predict the areas of difficulty and ease in learning based on the similarities and differences between the two contrasted languages. By contrast, Skinner's (1975) theory of verbal behaviour demonstrates how the identified difficult linguistic items can be taught and learned by applying the principle of reinforcement.

The teaching of pronunciation during this period placed much emphasis on achieving accuracy or perfection in pronunciation through extensive listen and repeat practices. This period was dominated by the Audio-Lingual Method (ALM) as the teaching method recommended for FL learners. In addition to the formal drills leading to habit formation, the ALM emphasised incorporating explicit pronunciation instructions (Nunan, 2003:113). Following this method, pronunciation features should be practiced and explained in phonetic details to facilitate pronouncing them accurately (ibid). This description includes all English phonemic contrasts, their allophonic variants and the phonotactic rules governing their combinatory possibilities. In the same line of thought, Murphy (2003:113) describes pronunciation instructions at this period as "based upon scripts and dialogues to be memorised, language lessons feature teacher-led presentations of language samples, substitution drills, intensive practice with sentence patterns, and so forth." According to Richards and Rodgers (2001:43), the attainment of pronunciation accuracy was of paramount importance within the ALM. It was believed that such perfection in the mastery of the sound system of English could be achieved by "guided repetition and substitution activities, including chorus repetition, dictation, drills and controlled oral-based tasks" (ibid:43).

In the Iraqi EFL context, the exact focus on the teaching of pronunciation was in the 1970s and beyond. Before 1970, that is, from 1873 to 1970, all English textbooks in Iraq followed the Grammar Translation Method (GTM) which neglected the teaching of pronunciation (Amin, 2017:579). According to the GTM, the main aim of teaching and learning English was to develop the reading and writing skills, hence grammar and vocabulary were emphasised. The speaking and listening skills were neglected and almost no attention was given to pronunciation (Larsen-Freeman, 2000:18). Hence, the period from the 1940s to the 1960s, which characterises the international development in pronunciation, is the first period which marks Iraq as out of the step regarding the role given to pronunciation. As supporting evidence,

Abdul-Kareem (2009:1) presented an official Iraqi document showing no role given to pronunciation in the teaching of English in Iraq (see appendix A).

2. From the 1960s to the 1980s

During this period, there were two opposing views regarding pronunciation status. The first view marginalised pronunciation, that is, paid no attention to the teaching of pronunciation. It was a reaction against the belief that language learning was the result of pure habit formation (Saville,2006). In this respect, Saville (ibid:25) stated that “the behaviourist theory of language acquisition is wrong because it cannot explain the creative aspects of our linguistic ability.” Criticising the teaching of pronunciation within the ALM, deBot et al. (2005: 65) emphasise that achieving accuracy in pronunciation for FL learners is not possible when learning takes place after puberty. The above arguments were the main causes behind marginalising pronunciation at that time. However, subsequent research revealed counterevidence showing both the possibility of achieving near nativelike pronunciation by some FL learners and the importance of instruction in improving pronunciation (Levis, 2018:223). I agree that achieving perfection in mastering the sound system of English is not possible for EFL learners; however, the teaching of pronunciation should not be marginalised because the current goal of pronunciation is intelligibility which can be achieved and constantly improved with instructions.

The second view regarding pronunciation is the renewed interest in pronunciation status. This renewed interest started in the 1970s. During this period, there was an interest in pronunciation and its instruction. When citing the relevant literature confirming this renewed importance to pronunciation, most researchers like Levis (2018), Fethi (2017) Kanellou (2011) and Al-Azzawi (2015) referred to Morley’s (2000) summary of the published articles at that time. Those articles focused on presenting arguments emphasising the importance of pronunciation and its instruction. In this respect, Morley (2000:102) states that:

These articles all addressed topics that were to be issues of continuing concern into the 1980s: (a) basic philosophical considerations for teaching pronunciation; (b) the importance of meaning and contextualised practice; (c) learner involvement; self-monitoring, and learners’ feelings; (d) learner cognitive involvement; (e)intelligibility issues; (f) variability issues; (g) correction issues; (h) increasing attention to stress, rhythm, intonation, reductions; (i) expanded perspectives on listening/pronunciation focus; (j) attention to the sound-spelling link.

In the Iraqi EFL context, the period from the 1960s to the 1980s corresponds with the important role given to pronunciation. From the 1970s to 2007, the teaching of pronunciation in Iraq received high importance at school and university levels following the ALM (Abdul-Kareem, 2009:6). This is the second gap between the international development in pronunciation and the status of pronunciation in the Iraqi EFL context. The rise and fall of pronunciation status described above were not reflected in the Iraqi teaching context. Although several language teaching approaches were suggested and modified like the CLT and the introduction of the intelligibility approach, ALM remained the dominant method up to 2007. Ignoring these international developments could be due to three main factors: copyright issues, the ongoing war and economic sanctions in Iraq and the Iraqi educational policy. In this respect, Amin (2017:579) confirmed that the English textbooks used in Iraq before 1970 were imported textbooks. These textbooks were the property of the authors not the Iraqi government. Hence, it was difficult to revise and modify the textbooks. The revision was only possible in the 1970s when the Iraqi Ministry of Education formed a local committee of Iraqi scholars who published the locally produced English textbook series entitled the 'New English Course for Iraq' (see section 1.7 for details).

In Iraq, the education policy is a top down policy which is centralised and highly state-controlled. This is reflected in the decisions regarding the types of English textbooks used, the hours dedicated to teaching and the methodology adopted (Altufaili, 2016:5). For example, at school levels, the teaching of pronunciation coincided with the use of the locally produced series of English textbooks entitled the 'New English Course for Iraq' (see Amin, 2017; Abdul-Kareem, 2009 and Altufaili, 2016). In describing the new English series, Amin (ibid:579) wrote that "it was designed on the structural approach and a new method of teaching, the Audio-lingual Method, was recommended for teaching this programme." In this respect, the teaching of pronunciation emphasised constant imitation and repetition of English speech sounds. At the university level, the ALM was also adopted. For the first academic year, this was in the form of O'Connor's (1980) Better English Pronunciation. O'Connor and Fletcher (1989:6) emphasised that accuracy in pronunciation could be achieved by diligent practice. The same method was adopted for the second academic year. This was in the form of Roach's (2000) English Phonetics and Phonology: A practical Course. In reviewing Roach's book, Ezza (2013:63) mentioned that the book focused on presenting explicit explanations of how sounds are produced and perceived as well as incorporating listen and repeat activities. These two are the principal criteria of the ALM. Reflecting on my personal experience as a student and later

a teacher of pronunciation in Iraq, I can say that the ALM was the only adopted approach in Iraq from the 1970s to 2007.

3. From the 1980s and beyond

This period was associated with the emergence of the Communicative Language Teaching (CLT). During this period, there was a heated debate among researchers regarding the status of pronunciation. Should pronunciation be regarded as a central component of oral communication or a subsidiary skill to speaking and listening? Levis commented on this status of pronunciation within the CLT by stating that “there was no in-between. Either pronunciation was still considered important, or it largely disappeared from language-teacher training” (2018:1). The introduction of intelligibility added a further emphasis on pronunciation (ibid). The importance of intelligibility to the teaching of pronunciation was described very eloquently by Fraser (2000:7) who stated that:

Being able to speak English of course includes a number of sub-skills, involving vocabulary, grammar, pragmatics, etc. However, by far the most important of these skills is pronunciation - with good pronunciation, a speaker is intelligible despite other errors; with poor pronunciation, a speaker can be very difficult to understand, despite accuracy in other areas. Pronunciation is the aspect that most affects how the speaker is judged by others, and how they are formally assessed in other skills.

In the Iraqi EFL context, the teaching of pronunciation remains within the ALM using the same English textbooks up to 2007. As I have already explained, there were three reasons why pronunciation status in Iraq did not cope with the changes and issues raised on pronunciation. For those reasons, the English pronunciation textbooks used at schools and universities remained unchanged until 2007 (Altufaili, 2016; Al-Azaawi, 2015). In 2007, the Iraqi government adopted the CLT as a teaching method at Iraqi schools and universities. Though the shift to CLT was important to the Iraqi EFL learners, the imported textbooks (English Pronunciation in Use and English for Iraq) exhibited two contradicting views regarding the status of pronunciation: marginalised at schools and highly prioritised at universities (see section 2.4. for details).

The above phases of the rise and fall in pronunciation within the main language teaching methods can be summarised in table (2.1.).

English Language Teaching Method	Pronunciation Status in EFL\ ESL Context	Pronunciation Status in Iraq
Grammar Translation Method	No attention to pronunciation (from the 1840s to the 1940s)	No attention to pronunciation (from 1873 to 1970)
Audio-Lingual Method	Imitation, repetition and explicit content instructions (from the 1940s to the 1960s)	imitation, repetition and explicit content instructions (from the 1970s to 2007)
Communicative Approach		
<ul style="list-style-type: none"> • Earlier development • Later development 	<p>Marginalised (From the 1960s to the 1980s)</p> <p>Central (from 1980 and beyond)</p>	<p>Marginalised at schools, but important at universities (from 2007 and beyond)</p>

Table 2. 1. Phases of pronunciation status

2.3. Approaches in the Teaching of Pronunciation

The previous section discussed the rise and fall of pronunciation within the general language teaching methods. The status of pronunciation has either been marginalised or given high importance due to shifting views in research. These various views have resulted in implementing different, but interrelated approaches in the teaching of pronunciation. Some approaches focus on teaching priorities and follow up instructions like the bottom up, the top down and the interactive approach (Dalton and Seidlhofer, 2001). Other approaches emphasise the nature of pronunciation instructions like the intuitive-imitative, the analytic-linguistic and the integrated approach (Celce-Murcia et al., 2010). Still other approaches focus on the central role of pronunciation to oral communication like the intelligibility approach (Levis, 2018). The following sections present each of the above approaches and discuss their relevance to the Iraqi EFL context.

2.3.1. The bottom up, the top down and the interactive approaches

The multiplicity of the approaches suggested to the teaching of pronunciation stems from researchers' beliefs about the nature of language, how learning takes place and the status of pronunciation within the language teaching methods (Fethi, 2017:114). In proposing the above approaches, it is likely that Dalton and Seidlhofer (2001) relied on the speech processing strategies suggested by theories of speech perception like the Exemplar Theory (Pierrehumbert,2001) and the perceptual Magnet Effect (Kuhl, 1991). These theories suggest that FL learners can understand speech by focusing on either the phonetic features of the speech signal and then moving up to other higher-level linguistic and non-linguistic features, or they can start with the higher-level features and then go down to the lower phonetic ones (see section 3.9 for details). The use of such speech processing strategies in relation to these pronunciation approaches was confirmed by Zoghbor (2016:15).

On the one hand, the bottom up approach refers to a learning strategy whereby a language learner moves from the smallest language item to the largest one. In terms of teaching priorities, this approach implies that teaching of pronunciation should start with the segmental aspects of phonology and moves up to the suprasegmental. Thus, in a typical pronunciation syllabus following this approach, the teaching materials should follow a gradual pedagogical sequence starting with vowels and consonants then moving up to stress and intonation (Dalton and Seidlhofer, 2001:90).

On the other hand, a top down approach builds on learners' prior linguistic and extra linguistic knowledge to interpret English speech. In this respect, Pinker (1994:474) states that a top down approach "uses knowledge and expectancies to guess, predict, or fill in the perceived event or message." In terms of teaching priorities, this approach implies that the teaching of pronunciation should start with suprasegmental then followed by segmental phonology. Balancing the above two approaches, Dalton and Seidlhofer (2001:90) suggest the interactive teaching approach. They (ibid) mention that "a particular direction (bottom-up/top-down) is not likely to be rigidly adhered to throughout the entire course: different purposes and stages in learning call for different priorities."

The above pronunciation approaches are based on two essential assumptions: teaching priorities and follow up instructions (Fethi, 2017:115). As far as priorities in teaching are

concerned, the influence of segmental and suprasegmental features on speech intelligibility varies among researchers. For example, Gilbert (2008:8) believes that suprasegmental features contribute to speech intelligibility more than segmentals; therefore, he (ibid) adopts a top down approach to the teaching of pronunciation. By contrast, Jenkins (2000) regards segmental phonology as more important to intelligibility; hence, she adopts a bottom up approach to the teaching of pronunciation for EFL learners. Regarding the follow up instruction, the underlying basic assumption is that a focused instructional treatment of one aspect of pronunciation leads to the mastery of the other with little formal pronunciation instruction (Fethi, 2017:115).

In the Iraqi EFL context, it seems that a gradual sequence of these approaches is suitable for the Iraqi EFL learners, starting with the bottom up approach then moving to the top down approach. The blending of the two approaches can be done at a later stage when the learners' phonological basis is set. As Roach (2000:2) argues "courses which begin with matters such as stress and intonation and deal with phonemes later are found more confusing by the students who use them." However, the way these approaches are used at schools and universities in Iraq is confusing. I have already stated that the CLT is the teaching method adopted in Iraq. The consequence of which is that the English textbooks at schools and universities have been modified in line with the CLT (Altufaili, 2016). When examining the two types of textbooks at school and university levels by the researcher, the bottom up approach is clearly employed at university levels. This has been confirmed by Roach (2000:2) who is the author of the pronunciation textbook currently taught to all second-year students in the Departments of English at the Colleges of Education in Iraq. By contrast, the textbooks used at school levels have placed no overt focus on pronunciation instruction. Pronunciation is almost wholly marginalised. Sometimes, the only place where pronunciation is mentioned is under the heading of language learning, with no more content found in the body of the textbooks (see appendix B).

2.3.2. The intuitive- imitative, the linguistic-analytic and the integrated approaches

According to Celce-Murcia et al. (2010), three approaches to the teaching of pronunciation are suggested focusing chiefly on the nature of instructions. These are the intuitive-imitative, the linguistic-analytic and the integrated approaches. The intuitive-imitative approach is based on the learners' ability to listen and imitate the sound system of the target language (Franklin, 2016:10). In this approach, there is no need for explicit pronunciation presentation. Pure

imitation and exposure to the target language are enough for acquiring an acceptable pronunciation level (Hismanoglu and Hismanoglu, 2010:984). A successful implementation of this teaching approach requires a good language model and learners' ability to imitate the pronunciation of that model. By contrast, the linguistic-analytic approach emphasises the importance of explicit pronunciation instructions in learning the sound system of English. In describing the linguistic-analytic approach, Celce-Murcia et al. (2010:2) focused on three points. The first point was related to the gathering of the phonetic information based on contrastive analyses supplemented by articulatory descriptions, charts of the vocal apparatus and phonetic alphabet. The second point was the explicit content instructions on the sound and rhythm of the target language. The third point emphasised that the approach should be considered a complement to the intuitive-imitative approach.

To account for individual differences and learning styles, Celce-Murcia et al. (2010) suggest that a combination of both approaches can be used by the teacher. The last approach is the integrated approach which considers pronunciation as part of communication rather than isolation. This approach teaches pronunciation through communicative activities which are pronunciation focused. Also, the approach encourages integrating the teaching of pronunciation with listening and speaking activities. This corresponds to what Watts and Huensch (2013:273) call the dual focus of oral communication on pronunciation.

In the Iraqi EFL context, the above first two approaches were used in the teaching of pronunciation from the 1970s to 2007 following the ALM as explained in section 2.2. From 2007 till now, I have already described in section (1.7.2) that there has been a shift from the ALM to the CLT, resulting in changing the language teaching approach adopted and the teaching materials used. Based on the top down education policy in Iraq (see Altufaili, 2016:5), the integrated approach should be followed from 2007 till now. However, this is not the case in actual practice. Based on my teaching experience at the University of Baghdad, most pronunciation teachers still follow the ALM despite the fact that the CLT is the recommended approach. This mismatch between what is prescribed and actual practice may be ascribed to the fact that such teachers find difficulty in implementing the CLT principles in the teaching of pronunciation. At schools, the English textbooks used have marginalised pronunciation as described in the previous section. My judgement on the use of the above approaches in the teaching of pronunciation in the Iraqi EFL context is based on three criteria: the related literature on teaching English in Iraq (see section 1.7.2), my examination of the status of

pronunciation in the English textbooks at schools and university levels and my own experience of learning and teaching English in Iraq.

2.3.3. An intelligibility-based approach to the teaching of pronunciation

Most researchers emphasise that intelligibility is the most reasonable approach to the teaching of pronunciation (Levis, 2018; Jenkins, 2000; Derwing, 2005; Cruttenden, 2014). Intelligibility is a pronunciation level which enables an EFL learner to be understood while speaking and understand the speech of others (Levis, 2018:232). The basic assumption of an intelligibility-based approach to pronunciation is that “pronunciation can improve, no matter the age of the learner” (ibid:223). The introduction of intelligibility gave rise to suggesting an intelligibility approach to the teaching of pronunciation within the CLT approach. In basic terms, the intelligibility approach regards pronunciation an essential component of oral communication which should be taught in meaningful communicative pronunciation focused activities (Levis, 2018: 230).

Levis (2018) suggested an intelligibility approach to the teaching of pronunciation. The approach was based on the intelligibility pronunciation model, the Lingua Franca Core, proposed by Jenkins (2001). Levis (2018:7) makes this clear when he stated that his arguments and thinking in pronunciation were greatly influenced by Jenkins’ (2000) research on English as a Lingua Franca. For this study, the proposed intelligibility approach will be based on Gimson’s (2001) MGI. Detailed description of the suggested intelligibility approach for Iraqi EFL pronunciation classrooms is presented in section 6.4. The above various approaches in the teaching of pronunciation are summarised in table (2.2).

Pronunciation Approaches	Use in Iraq
Top down approach	Not used
Bottom up approach	Used at the school and university levels from 1970 to 2007
Interactive approach	Not used

Analytic-linguistic approach	Used at school and university levels (from 1970 to 2007)
Imitative-intuitive approach	Used at school and university levels (from 1970 to 2007)
Integrated approach	Used at universities from 2007 and beyond but not at schools
Intelligibility approach	Used neither at schools nor at universities

Table 2. 2. Summary of pronunciation approaches in Iraq

2.4. Pronunciation Materials in the Iraqi EFL Context

There are two types of English textbooks currently in use at schools and universities in Iraq. At the school level, the Iraqi government adopted a series of English textbooks called 'English for Iraq'. These English textbooks follow the CLT approach and are prescribed for all schools in Iraq starting from 1st year primary till high school. The aim of the 'English for Iraq' series is to develop the communicative competence of Iraqi EFL students (Altufaili, 2016). A close examination of this English series by the researcher shows that pronunciation materials are not emphasised. They are taught indirectly or implicitly while teaching the speaking and listening skills. In all the series of the textbooks I surveyed, the pronunciation materials are only mentioned in some units in the table of contents and at the end, exactly at the very end corner of that unit. No other reference to these materials in the body of the textbooks is made. There are no separate sections devoted to the presentation of these pronunciation materials in the body of these textbooks (see appendix B). Most of the above series of English textbooks for Iraqi schools can be found online which is a good test to check the unimportant role given to pronunciation. As I have pointed out earlier pronunciation was marginalised at the first stage of the CLT approach. To use Levis's (2018:1) expression, pronunciation was a servant skill. This status of marginalising pronunciation at schools is based on the belief that learners' engagement in meaningful communicative activities will enable them to pick up the segmental and suprasegmental aspects of pronunciation effectively (Efstathiadis, 1993:70). From my own perspective, if the aim of these English textbooks is to develop the communicative competence of Iraqi EFL students, it is strange that pronunciation is treated peripherally.

At the university level in Iraq, the situation is odd. Two types of pronunciation textbooks exist simultaneously following two different approaches to the teaching of pronunciation. The first one is Better English Pronunciation by O'Connor (1980) and English Pronunciation in Use by Jonathan Marks (2007). These pronunciation textbooks are prescribed for 1st year university students. They follow two different approaches: audiolingual and integrative respectively. In both these textbooks, pronunciation is given high importance. Both textbooks aim to develop Iraqi EFL learners' pronunciation competence at the production and recognition levels. Thus, segmental and suprasegmental features are described in detail. Although the theoretical content of the above textbooks is the same, the teaching approaches are different. Based on my learning and teaching experience in Iraq, I confirm that ALM is still the approach used by teachers in the teaching of pronunciation. Most if not all pronunciation teachers still use O'Connor's (1980) book, which is based on the ALM. What has been said about the pronunciation textbooks for 1st year Iraqi college students applies also to 2nd year pronunciation textbooks. There are two textbooks that differ in their pronunciation approaches: English Phonetics and Phonology: A Practical Course by Peter Roach (2000) and English Pronunciation in Use by Jonathan Marks (2007). These textbooks follow two different approaches: audiolingual and integrative respectively. In Roach's book, pronunciation is practiced based on the principles of the ALM where explicit content instruction is followed by repetition and drilling. By contrast, Marks' book focuses on teaching pronunciation through communicatively based activities. For detailed information about the pronunciation materials emphasised in the above textbooks for 1st and 2nd year students, the reader is referred to (appendix C).

Based on my survey of the above pronunciation textbooks, the related literature presented in the Literature Review Chapter and the focus of the present study, I have identified three different types of segmental materials suggested for EFL learners. The differences among these suggested segmental materials are based on the type of pronunciation principle adopted. If the teaching of pronunciation is based on perfection in mastering the sound system of English, all English vowels and consonants along with their allophonic variations should be taught following the English RP accent only. If the teaching of pronunciation is based on intelligibility, two options are available. If intelligibility is based on non-native English speakers, the segmental phonemes found in Jenkins' (2000) LFC should be taught and investigated. If intelligibility is based on native English speakers, the segmental phonemes found in Gimson's (2001) MGI should be taught and investigated. In this study, I adopt

Gimson's (2001) MGI (see section 3.3. and 3.5. for further information on the nature of the segmental phonemes and the reasons for adopting Gimson's (2001) MGI).

2.5. Beliefs Regarding the Teaching of Pronunciation

At first sight, the title of this section appears to contradict itself. Why do we seek the beliefs of students and teachers concerning the best approaches to the teaching of pronunciation if the Iraqi government controls language policy making? According to Brown (2002:10), the answer to this question is twofold. First, the beliefs of students and teachers can have an influence on the final decisions taken by the educational policy makers and curriculum designers. The second answer is related to what is called the post method era emphasised in current research practices (Brown, 2002). This post method era states that it is no longer accepted to impose universally claimed English language teaching methods to specific teaching contexts. In such contexts, teachers and students are the active participants in the teaching and learning process. It is their views concerning the best way of teaching and learning which should be considered rather than imposing the rules from outside. In this regard, classroom practices may not necessarily adhere to theory (see Morley,1991:481; Brown, 2002:10).

In reviewing the related literature, the aim is to examine whether the beliefs of Iraqi students and teachers concerning pronunciation correspond to the pedagogical issues and practices which my present investigation adheres to. However, I must confess that there is a scarcity of pronunciation research conducted in the Iraqi EFL context. This comparative lack of research in pronunciation is also confirmed in other EFL and ESL teaching contexts (Huwari and Mehawesh, 2015:31). The following is a sample of research on the beliefs of Iraqi EFL students and teachers regarding pronunciation.

Al-Azzawi (2015) conducted a study to examine the beliefs of Iraqi EFL teachers and students at the university level regarding the teaching of pronunciation. Three central themes were addressed in his article: the importance of pronunciation, intelligibility versus accuracy and the teaching of pronunciation. Twenty-four teachers and eight students participated in the study. Their responses to a questionnaire consisting of five questions revealed the following findings: 1- pronunciation was of utmost importance, 2- intelligibility was favoured over accuracy 3. pronunciation should be taught in isolation in the first year and integrated with other language skills in the following years. Although the first two findings correspond to the view my research

adheres to, the third finding which is related to the teaching of pronunciation is a bit strange. It seems that both the teachers and the students wanted to apply two separate approaches in the teaching of pronunciation: the linguistic-analytic and the integrative approach. These two approaches contradict each other in terms of goals, instructions and activities used. What my research suggests is an intelligibility approach to the teaching of pronunciation for Iraqi EFL learners (see section 6.4).

Another investigation of the beliefs of Iraqi teachers and students regarding pronunciation issues was done by Rashid (2009; 2011). Rashid conducted two studies. The first paper (2009) focused on intelligibility and the second (2011) focused on pronunciation models. Rashid (2009) investigated the beliefs of Iraqi university teachers regarding the applicability of intelligibility into the classroom. The participants were 17 Iraqi teachers. They were required to answer one open ended question regarding intelligibility. The question was as follows “In your opinion what does ‘intelligibility’ (that is students’ speech intelligibility) mean in our classrooms, and particularly phonological intelligibility?” All responses pointed to the belief that intelligibility was important to Iraqi EFL students and it should be incorporated into the classroom. This finding also enhances the significance of my present investigation.

The present study is the first serious attempt in Iraq to investigate the intelligibility of Iraqi EFL learners’ accented English within a well-defined approach and methodology. The second study by Rashid (2011) was on the pronunciation model adopted. Her paper aimed to find out which English accents Iraqi EFL teachers and students believe they should follow. Should Iraqi EFL pronunciation be based on RP or General American (GA)? The researcher used two questionnaires consisting of three questions each, one to be completed by 72 students and the other by 20 teachers. The findings revealed affirmed the use and preference of RP in academic settings.

My study builds on the above findings and suggests that native and non-native English accents should be incorporated into the Iraqi EFL classroom because English is used now as an international language for communication. I have pointed out the scarcity of pronunciation studies, especially those concerning beliefs on pronunciation. Most pronunciation studies conducted in Iraq concentrated on the factors which impede or facilitate the learning of segmental or suprasegmental features. For this reason, I have examined other studies dealing with students' and teachers' beliefs regarding the learning and teaching of English in general.

Some of the studies refer to pronunciation issues relevant to the ones I am researching. Focusing on the importance of the CLT approach in the teaching of English in Iraq, Altufaili (2016) investigated the beliefs of 52 Iraqi school teachers. The researcher adopted a mixed methods research approach using a survey and an interview to obtain teachers' beliefs on three aspects. The first aspect was related to the merits and demerits of adopting the CLT. The second concerned the effectiveness of the English textbooks used. The third was related to the effectiveness of teacher training workshops. The finding related to the effectiveness of the adopted CLT approach is relevant to my investigation because the main principal of the intelligibility approach is to promote communication success.

In her study on Iraqi EFL learners' beliefs about the learning of English, Abid (2012) conducted a study on 101 Iraqi university students. The aim was to explore the beliefs of Iraqi EFL learners and how such beliefs affected their learning process. Regarding the findings related to pronunciation, Abid mentioned that these learners believed in achieving pronunciation accuracy or perfection. If their pronunciation was not perfectly accurate, their message would not be understood. This misconception of pronunciation accuracy had a negative effect on their language development. In this respect, Abid (2012:73) stated that these learners preferred not to speak if they felt that their pronunciation was not accurate. They also preferred that their teachers should correct their mistakes immediately so that they would not develop wrong pronunciation habits. This finding which adheres to pronunciation accuracy contradicts the one arrived at by Al-Azzawi (2015) and Rashid (2009) who emphasised that intelligibility was the required pronunciation level by Iraqi EFL learners.

One last issue is related to the general beliefs based on the findings of pronunciation research done by the Iraqi EFL researchers. Most if not all of such findings pointed out to the conclusion that Iraqi EFL pronunciation is incompetent and deficient. This finding is based on achieving perfection in the mastery of the sound system of RP. Based on the Literature Review Chapter, many researchers emphasise that a perfection goal in pronunciation is unrealistic and hard to achieve especially for EFL learners (Cruttenden, 2014; Derwing, 2005; Quirk, 1990). Too much reliance on such an unachievable goal in pronunciation will lead Iraqi EFL learners develop a misconception that their pronunciation will be deficient and difficult to improve. In the present investigation, intelligibility rather than perfection is the pronunciation reference point as determined by Gimson's (2001) MGI.

2.6. Summary and Conclusion

This chapter surveyed current practices in the teaching of pronunciation generally and in Iraq. It presented detailed account of the different phases of pronunciation instructions, the approaches adopted, the material used and FL learners' beliefs. In each section, a reference was made to how pronunciation was used in the Iraqi EFL context.

The chapter revealed several themes concerning the current status of pronunciation in Iraq. First, pronunciation was marginalised at schools, but not at universities. This was revealed by examining the content and body of the English textbooks prescribed for school and university levels in Iraq. At schools, pronunciation was marginalised. It was considered as subservient to or derivative of the speaking skill in the sense that pronunciation will be developed indirectly through speaking practice. Hence, there was no explicit content nor were there pronunciation activities. At university, the scene was also confusing. Although pronunciation received good attention, the teachers followed the ALM approach in the teaching of pronunciation despite adopting the CLT in its second phase of development which paid great attention to pronunciation (see section 2.4 for details). The second theme emerged from the chapter was related to the pronunciation materials emphasised in the teaching of pronunciation. In this regard, the choice of these pronunciation materials differed based on the pronunciation teaching approach adopted. By contrast, the intelligibility approach was based on the criteria of selectivity and importance to communication in the choice of pronunciation materials. In Iraqi schools and universities, all pronunciation materials were emphasised. This shows that intelligibility was wholly ignored in the Iraqi pronunciation classrooms. The third theme was the mismatch between students' beliefs regarding the importance of pronunciation and the pronunciation goal required as well as the textbooks adopted. Although the Iraqi students emphasised the importance of teaching pronunciation, the pronunciation goal was impractical, namely perfection in mastering the sound system of English. Also, the textbooks used either marginalised pronunciation or taught it within the ALM approach.

The aim of the chapter was to provide a useful context to the study and provide readers with better understanding of the importance of this research. The next section presents the Literature Review Chapter of the study.

CHAPTER THREE: LITERATURE REVIEW

3.1. Introduction

The present study investigates the productive and perceptive intelligibility of Iraqi EFL learners in relation to foreign accent (FA) and accent familiarity (AF). This chapter presents the theoretical and practical work related to the study. It starts by introducing the different interpretations given to intelligibility and the effect these various interpretations have on the investigation into the intelligibility of foreign accented English. Next, the English pronunciation intelligibility models suggested for EFL learners are presented. The factors affecting intelligibility are discussed, with a special focus on FA and AF. In presenting FA, the focus is on investigating this effect at the segmental aspect of phonology. The theories underlining speech production and perception are presented. Such theories provide explanations for the differences between productive intelligibility and perceptive intelligibility. This chapter also compares the segmental phonemes of English and Iraqi Arabic (IA) to identify areas of similarity and difference in the segmental sound system of the two contrasted languages. These will be the basis for constructing the speech intelligibility test and choosing the reading and listening test materials.

3.2. The Concept of Intelligibility

Munro states that “[i]ntelligibility is the single most important aspect of all communication” (2011:521). Although the concept of intelligibility is central to communication success, its definition is still vague and misunderstood (Browne, 2016). Isaacs and Trofimovich state that “[i]ntelligibility is an evasive concept that we know little about” (2016:557). Jenkins mentions that “[t]here is yet no broad agreement on a definition of the term ‘intelligibility’: it can mean different things to different people” (2000:70). Further to this, Deterding and Kirkpatrick describe intelligibility as being “somewhat elusive” (2006:392). The above statements emphasise that researchers need to make explicit what sense and scope of intelligibility they are following in their research prior to any investigation.

In the literature on intelligibility, two opposing definitions are suggested. The first defines intelligibility as producing and recognising the phonetic features of speech signals, leaving the

assessment of meaning to other levels of speech analysis. For example, Smith and Nelson (1985:334) define intelligibility as word / utterance recognition. Similarly, Field (2005:401) defines intelligibility as “[t]he extent to which the acoustic phonetic content of the message is recognisable by a listener.” Browne (2016:109) emphasises that intelligibility is the production and recognition of the formal aspects of speech. These researchers, among others, were mainly concerned with the formal aspects of intelligibility indicated by the types of speech data they collected and tested in their research. In most of their investigations, these researchers used decontextualised stimuli on the basis that their research findings should be purely phonological.

The second sense defines intelligibility in relation to listeners’ understanding. For example, Derwing and Munro (2005) and Munro and Derwing (2006; 2011; 1995) define intelligibility as the extent to which a listener can understand of an utterance as measured by an orthographic word transcription task. This means that the more words a listener can write correctly, the more understandable the speech is. In the same vein, Abercrombie (1949:120) defines intelligibility as the extent to which the speaker’s utterance is understood by a listener with little effort. Also, James (2014:212) defines intelligibility as “the accessibility of the basic literal meaning, the propositional content, encoded in an utterance.” These researchers’ conceptualisation of intelligibility recognised the link between pronunciation and meaning. Therefore, they researched the term intelligibility in contextualised discourses (Saito et al., 2016). Some researchers believe that the definition of intelligibility in relation to understanding should not be left as a general loose term. For example, James emphasises that the type of understanding should be limited to the basic literal meanings of words and utterances (2014:212). In this sense, intelligibility is more restricted than the one proposed by Bamgbose (1998:11) who states that intelligibility is “a complex of factors comprising recognising an expression, knowing its meaning, and knowing what that meaning signifies in the sociocultural context.”

As demonstrated above, the two different interpretations of intelligibility have led to different approaches to the way non-native English accented speech is collected, described and analysed. In the case that intelligibility is restricted to the recognition of the formal properties of speech sounds, the research materials tend to be out of context. By contrast, contextualised materials are preferred by researchers when intelligibility is defined with reference to meaning. In the present study, the above two interpretations of intelligibility are adopted. In this respect, intelligibility refers to a pronunciation level in English which enables Iraqi EFL learners to produce as well as understand the literal meanings of words and utterances as uttered by native

and non-native English speakers (Abercrombie, 1949; Gimson, 2001; Cruttenden, 2014; Munro and Derwing, 2006; Levis, 2016). This entails that intelligibility will be defined in relation to sound production when investigated at the speech production level, whereas it will be defined in relation to understanding when investigated at the speech perception level. By understanding, I mean the grasping of the literal meanings of words and utterances as proposed by James (2014:212). The following table (3.1) summarises the two different interpretations of intelligibility as suggested by various researchers.

Intelligibility and Pronunciation
<ol style="list-style-type: none"> 1. Smith and Nelson (1985:334) defines intelligibility as word / utterance recognition. 2. Field (2005:401) defines intelligibility as “the extent to which the acoustic phonetic content of the message is recognisable by a listener”. 3. Browne (2016:109) defines intelligibility as the production and perception of the formal aspects of speech. 4. Jenkins (2000:78) defines intelligibility “the production and recognition of the formal properties of words and utterances, and, in particular, the ability to produce and receive phonological form.”
Intelligibility and Understanding
<ol style="list-style-type: none"> 1. Derwing and Munro (2005) define intelligibility as the extent to which a listener could understand an utterance as measured by a word transcription task. 2. Abercrombie (1949:120) defines intelligibility as the extent to which the speaker’s utterance is understood with little effort. 3. James (2014:212) defines intelligibility as “the accessibility of the basic literal meaning, the propositional content, encoded in an utterance.” 4. Bamgbose (1998:11) states that intelligibility is “a complex of factors comprising recognizing an expression, knowing its meaning, and knowing what that meaning signifies in the sociocultural context.”

Table 3. 1. Summary of the definitions of intelligibility

Having established the definition of intelligibility adopted in the present study, the next section introduces the intelligibility pronunciation models that have been proposed for EFL learners, namely Gimson’s (2001) Minimum General Intelligibility (MGI) and Jenkins’ (2000) Lingua Franca Core (LFC). The focus will be on Gimson’s (2001) MGI, which is the one adopted in the present study.

3.3. Gimson's (2001) Intelligibility Pronunciation Model

The available pronunciation models of English are distinguished according to their pronunciation goals. They either emphasise perfection in mastering the sound system of RP or they emphasise intelligibility (Levis, 2016). The perfection goal emphasises that a non-native English speaker should acquire a perfect pronunciation of the English RP accent (Moyer, 2013). Thus, any phonetic deviations from the norms set by this native English accent should not be ignored as they cause failure in speech production and perception. According to this principle, the achievement of perfect pronunciation in a foreign language is both desirable and possible (Levis, 2005:370). This insistence of perfection in English pronunciation has generated a type of pronunciation studies called accent reduction studies (Munro and Derwing, 1995). The primary aim of such studies is to eradicate any trace of a foreign accent.

Following the above pronunciation goal, researchers have investigated in detail the sound properties of English. Every single English speech sound has been described in phonetic, phonological and acoustic terms. For example, Ladefoged (2005) investigated the acoustic features of English phonemes, describing vowels and consonants in terms of their acoustic features. These acoustic features are considered as realisations of their parallel articulatory ones. Roach (2009) presented a detailed phonetic and phonological description of English segmental and suprasegmental phonemes that EFL / ESL learners should master. Addressing the difficulties facing English language learners, many published articles and dissertations focused on presenting elaborate analyses of single sound features, for example, voice quality by Alsiraih (2013) and gemination by Ghalib (1984).

Although the requirement of perfect pronunciation of the RP accent has been the dominant principle in pronunciation studies, it is criticised and superseded by the intelligibility principle (Isaacs and Trofimovich, 2016:5). This reflects Abercrombie's (1949) assertion that the mastery of perfect English pronunciation in all its fine phonetic detail is unnecessary for non-native English speakers; it may be important for secret agents but not for most learners. What these learners need, he argues, is "a pronunciation which can be understood with little or no conscious effort on the part of the listener" (Abercrombie, 1949:120).

Following this new line of native English speakers' based pronunciation research, Gimson (2001) suggests the possibility of modifying the sound system of British English to comply with the intelligibility performance levels required of non-native English speakers (see also Cruttenden, 2014). Gimson (ibid) proposes his intelligibility model as the target pronunciation model for non-native English speakers to achieve. In this respect, Gimson (ibid:309) states that any model of English pronunciation should satisfy three requirements. First, the model should be learnable as any natural pronunciation model. Second, it should have international validity. Third, it should be the basic for understanding other native and non-native English varieties.

Gimson's (2001) intelligibility model is based on modifying the pronunciation features of the RP accent to include other alternative pronunciation features found in General American English. Other prominent scholars in the field like Abercrombie (1949), Brown (1988), Quirk (1990) and Cruttenden (2014) have supported modifying the sound system of English in terms of intelligibility. The modifications of the British English sound system suggested by Gimson (2001) have resulted in three intelligibility performance levels for three distinct types of learners: Minimum General Intelligibility (MGI), High Acceptability and Restricted Intelligibility. According to Gimson (2001), MGI refers to a level of speech performance at which an EFL learner has mastered the basic phonemic contrasts of English at the production and perception level. This phonological competency will enable EFL learners to express themselves in the target language. Successful interaction in English at this intelligibility performance level often requires "that the context is known, and the listener can tune in to the foreign accent" (Gimson, 2001:298). Tench (1996:35) holds the same idea when he mentions that "a learner's pronunciation must be accurate enough to be intelligible, but not necessarily identical to a native speaker's model."

With respect to High Acceptability, Gimson (2001:302) defines this intelligibility level from a production and perception viewpoint. At the production level, High Acceptability means that non-native English speech production will be almost the same as that of native English speakers. This accented English speech will not be immediately identified as foreign by native English listeners. At this level, non-native English speakers can produce the phonetic and phonemic aspects of English at a high level of proficiency. At the perception level, High Acceptability means that non-native English speakers can "understand without difficulty all varieties and styles of RP as well as the other important forms of English" (Gimson 2001:302). High Acceptability corresponds to non-native English speakers who acquire English at an early

stage and naturally in native English-speaking contexts. By contrast, non-native English speakers whose speech is at the level of Minimum General Intelligibility have learned English after puberty and in formal classroom settings (Yashima, 2002). In describing the English language learner who aspires for High Acceptability level, Gimson (2001:292) recommends that such learners should acquire connected speech pronunciation features. These features include the ways sounds are assimilated, modified and elided. The acquisition of such native-like pronunciation features will help the language learner at this level to understand colloquial English as well. In this regard, the English language learner is recommended first to limit his speech to a relatively careful one, while at the same time paying close attention to features of connected speech (ibid).

The above dichotomy of intelligibility levels corresponds to the distinction between language learning and language acquisition. Wilkins (1974:26) defines language acquisition as “[t]he process where language is acquired as a result of natural and random exposure to language”, whereas language learning refers to “a process where the exposure is structured through language teaching situation.” Iraqi EFL learners fall into the latter category as they learn at school and are taught by non-native English teachers.

The final intelligibility performance level suggested by Gimson (2001) is Restricted Intelligibility. At this intelligibility performance level, the speaker is “unintelligible when s/he speaks English with the phonetic and phonological system of his/her own language. The speaker may be comprehensible only to the extent that some keywords can be decoded because of the general context of the situation” (2001:299). The above quotation emphasises that English utterances spoken exclusively with the phonetic features of the non-native English speaker’s native language will be unintelligible in the international context of English. The unintelligible use of English at this Restricted Intelligibility level was clearly described by Gimson (2001:299) who wrote:

English is used as a lingua franca within their own country which have a number of indigenous languages none of which is acceptable as a national language. Such types of English of restricted intelligibility may conform in many features of lexis and grammar to the native language of Britain or America and may thus in their written form pose no great problems of international intelligibility. But in the spoken form of transmission, interference from indigenous languages may erect a formidable barrier for listeners from other areas where English is spoken.

Of the three intelligibility performance levels, Gimson (2001) states that MGI is the most suitable target for EFL learners. MGI is the focus of the present study because it is recommended for EFL context and the pronunciation features emphasised are the segmental aspects of the English sound system. Regarding the language teacher in the EFL context, Gimson (2001:299) emphasises the necessity for good pronunciation since “his students will imitate bad pronunciation as exactly as good pronunciation.” He goes on to say that if the non-native English teacher “is using illustrative recorded materials, his own pronunciation must not diverge markedly from the native model.” Similarly, Wilkins (1972:38) argues that “If we can anticipate that the achievement of the learners will fall short of the model that is put before them, it is all the more important that that model should be as accurate a sample of speech as possible.”

3.3.1. The segmental content of Minimum General Intelligibility (MGI)

In EFL contexts, most researchers emphasise segmental over suprasegmental features in relation to intelligibility (Hellmuth, 2014; Jenkins, 2000). This emphasis on segmental phonology reflects the type of careful speech production found in EFL contexts. In such contexts, non-native English speech is described as careful because it is devoid of connected speech processes and contains mostly articulated segmental features (Hock, 1986). When investigating the segmental aspect of FA, the present study is dealing with careful speech as an attribute of Iraqi EFL learners’ speech.

In terms of the segmental features of Gimson’s (2001) MGI, the sound modifications are established based on a comparison between the sound system of British RP and General American (GA). As far as the modifications of vowel phonemes are concerned, Gimson (2001) states that the vowel system of English can be modified both phonemically and phonetically without affecting the intelligibility of EFL accented speech. In phonemic terms, the centring diphthongs /ɪə eə ʊə / can be modified to a vowel + r by the retention of postvocalic /r/. This results in producing /i:r, e:r and u:r / in words like peer / pi:r / pair / pe:r / and poor / pu:r / or / pɔ:r /, respectively. A postvocalic /r/ can also be applied to the long vowels /a:/ and /ɜ: /, which can be produced with an /r / sound as in car / ka:r / and bird / bɜ:rd /. These modifications also affect the phonemic status of the closing diphthongs /eɪ/ and /əʊ/. These diphthongs can be

realised as the long cardinal vowels ⁵[e] and [o], respectively. By using the values of the cardinal vowels, the pure English vowels /e/ and /æ/ can be pronounced as the cardinal vowels [ɛ] and [a] respectively. The same modification can occur with /ʌ/, which can be produced with the mid central /ə/. The above sound modifications affect both the phonetic and the phonemic nature of English vowel phonemes. Phonetically speaking, some vowels are produced in approximation to the cardinal vowels. These cardinal vowels are considered to be reference points (Roca and Johnson, 1999). This means that learners of English can pronounce the vowels in approximation to the theoretical cardinal vowels. Such a pronunciation will approach the desired target production without deviating too far to be unintelligible.

With respect to consonants, Gimson (2001) states that most phonemic oppositions of consonants should be maintained and that sound modification will mainly affect the phonetic nature of consonants. For example, aspiration is chiefly used in RP to distinguish between initial accented plosive consonants /p, t, k/. However, Gimson (2001) suggests that voicing alone can be used to distinguish between voiceless and voiced plosive consonants as in pin and bin. Similarly, the point of articulation for /d and t/ can be dental rather than alveolar as this phonetic modification does not harm intelligibility. Also, the /ŋ/ sound can lose its phonemic status and be replaced by /ŋg/ in words like singer and hanger. Furthermore, phonetic modifications can affect the dark and light allophones of the phoneme /l/. Gimson suggests that the light [l] can be employed instead of a dark [ɫ] without intelligibility loss. This phonetic modification also extends to situations where the phoneme /l/ becomes syllabic. Under particular phonological conditions, the /l/ phoneme acquires some vowel qualities and forms a syllable by itself (Abercrombie, 1967:78). For example, the /l/ sound in the word bottle is pronounced as syllabic /botl/. Gimson (ibid:320) suggests modifying the pronunciation of syllabic consonants by inserting a schwa before them. Thus, the syllabic [l] in the word little can be pronounced as /litəl/ without affecting meaning. The last permissible phonetic modification in consonant phonemes is related to the point of articulation of the /r/ sound. Gimson suggests that the /r/ sound can be produced as an alveolar tap rather than an RP post alveolar approximant. These sound modifications are summarised in table (3.2) below.

⁵ Cardinal vowels are theoretical vowels devised to show the extreme points of tongue height in the mouth in the articulation of vowels. These eight vowels do not belong to any language. They are reference points used for comparison only (Roach, 2009).

RP	MGI	RP	MGI
/i:/	as RP	/eɪ/	[e:]
/ɪ/	as RP	/əʊ/	[ɔ:]
/e/	[ɛ]	/aɪ/	as RP
/æ/	[a]	/aʊ/	as RP
/ɑ:/	/ɑ:/ or /ɑ:r/	/ɔɪ/	as RP
/ɒ/	as RP	/ɪə/	/i: ə/ or /i:r/
/ɔ:/	as RP	/eə/	/ eɪ r/
/ʊ/	as RP	/ʊə/	/u: ə/ or /u:r/
/u:/	as RP	word stress	as RP
/ʌ/	/ə/	Rhythm	as RP
/ɜ:/	/ɜ:r/	Intonation	as RP
/ə/	as RP	Elision	Ignored
/ŋ/	/ŋg/	assimilation	Ignored
R	[r]		
L	always clear		
/l, n/	/əl/ /ən/		
t d	[t, d]		

Table 3. 2. Gimson's (2001) MGI

The next section introduces the second intelligibility model proposed by Jenkins (2000) for EFL learners or as she prefers to call them non-bilingual English speakers.

3.4. Jenkins' (2000) Lingua Franca Core

Jenkins (2000:1) proposes the term English as a Lingua Franca (ELF) to describe a contact language used by people from different first language backgrounds. Specifically, Jenkins and Leung (2017:2) use the term ELF to refer to “the use of English in intercultural communication among English users from any part of the world.” Thus, the Lingua Franca Core (LFC) is “a revised pronunciation syllabus which targets for production those features of GA and RP which were found to be crucial in promoting intelligible pronunciation in ELF interactions” (Jenkins, 2006:76).

From a Lingua Franca perspective, Jenkins (2000) studies non-native interaction in English in the Expanding English Circles, or EFL, to establish a common core for international phonological intelligibility among non-native English speakers from different first language backgrounds. Jenkins (ibid) explicitly states that the LFC is intended for the type of speakers whom she calls non-bilingual English speakers, which means that they are bilingual but not in English. In this respect, Jenkins (2000:78) defines intelligibility as “the production and recognition of the formal properties of words and utterances and, in particular, the ability to produce and receive phonological form” but regards the latter as a prerequisite (though not a guarantee) of ILT success at the locutionary and illocutionary levels.”

The materials used for her study were recorded interactions among advanced EFL learners of English. To achieve international intelligibility, some linguistic concepts were re-emphasised and others modified. For example, interlanguage was not considered as dynamic and transitional in the sense used by Corder (1967). Rather, Jenkins (2000) viewed it as fossilised. Fossilisation is a phenomenon whereby speakers will continue producing accented speech no matter how much training they receive (Selinker,1972:215). Moreover, the use of interlanguage assumes following native English speakers’ norms, which Jenkins rejected as unachievable. Jenkins’ (2000) study also emphasised the language transfer principle. She explained the principle from the viewpoint of accommodation theory. In this respect, Jenkins (2000) claimed that interlocutors attempt to converge to each other’s pronunciation rather than to diverge. The speakers try to modify their pronunciation to achieve success in communication. In her study, Jenkins did not use listeners to identify the pronunciation errors. The participants in the interaction identified these errors through meaning negotiation strategies (ibid:79). Based on these interactions, Jenkins (2000) proposed some key features of the LFC and compared them with EFL model, as summarised in table 3.3 below.

	EFL Targets	ELF Targets
Consonant inventory	All phonemes	All phonemes except for /θ/ and /ð/
	RP non-rhotic /r/ GA rhotic /r/	Rhotic /r/ only
	RP intervocalic [t] GA intervocalic [t]	Intervocalic [t] only
Phonetic requirements	Rarely specified	Aspiration after /p/, /t/, and /k/. Appropriate vowel length before fortis/lenis consonant phonemes.
Consonant cluster	All word positions	Word initially, word medially
Vowel quantity	Long-short contrast	Long-short contrast
Vowel quality	Close to RP or GA	L2 (consistent) regional qualities. Plus /ɜ:/.
Weak forms	Essential	Unhelpful to intelligibility
Features of connected speech	All	Inconsequential or unhelpful
Stress-timed rhythm	Important	Does not exist
Word stress	Critical	Unnecessary / can reduce flexibility
Nuclear (tonic) stress	Important	Critical

Table 3. 3. Targets of the EFL and the EIL pronunciation syllabus

(Jenkins, 2005, cited in Zoghbor, 2011:54)

Following a new line of research, Jenkins (2007:3) later expanded her ELF interactions to include native English speakers. The aim was to reflect the international interactions in English as viewed by Kachru's (1985) Three Concentric Circles of English. Kachru (1985) believes that English users should not merely be divided into native and non-native. Instead, they should be considered as belonging to one of three Concentric Circles: Inner Circle, Outer Circle and Expanding Circle, as shown in figure 3.1 below.

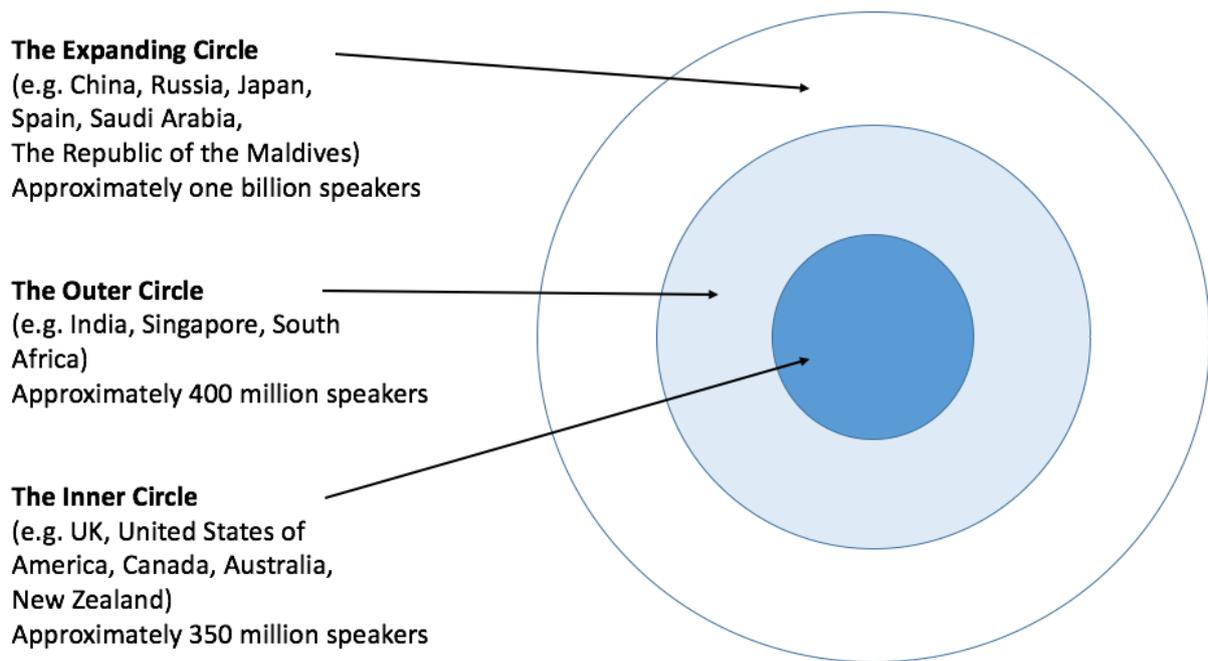


Figure 3. 1. Concentric circles of English

(Kachru, 1985, cited in Browne, 2016:14)

3.5. Lingua Franca Core (LFC) or Minimum General Intelligibility (MGI)

The first issue in deciding which intelligibility pronunciation model to choose is related to the goal of teaching English pronunciation. Pluricentric intelligibility researchers, represented by Jenkins (2000), claim that the primary goal of native English speaker intelligibility models is the perfect mastery of the English RP accent. They maintain that this nativelikeness English pronunciation is unattainable and impossible to achieve and that the presence of a foreign accent is unavoidable (Cooper and Bradlow, 2016). Such researchers argue that one of the factors preventing nativelikeness pronunciation is the Critical Period Hypothesis (CPH), which implies that learning English pronunciation is biologically conditioned. Flege (1995:234) links CPH to neurological maturation, when the organs become stiff and no new features of speech can be perfectly mastered. Similarly, Miller (2004:2) states that “the CPH was offered as an explanation for why many adults trying to learn a second language seemed to have a hard time achieving native-like pronunciation.” Also, Long (1990:280) confirms that a nativelikeness pronunciation in an ESL learning environment will start to diminish by the age of six and

difficult to attain after twelve. After twelve, Long (ibid) maintains that native-like pronunciation will be impossible to achieve no matter how much exposure to language these learners have.

In response to the above argument, monocentric intelligibility researchers, represented by Gimson (2001), explicitly argue that non-native English speakers in EFL contexts should aspire for intelligibility rather than perfection in English pronunciation. They maintain that EFL learners need to possess the basic English sound distinctions only and their speech can be understood as long as the context is known and the listener can tune in to the speaker's accent (Gimson, 2001; Cruttenden, 2104). A similar approach to intelligibility has been advocated by authorities in the field of linguistics such as Abercrombie (1949;1967), Brown (1988), Quirk (1990) and Cruttenden (2014). These scholars have suggested that non-native English speakers only need to have a type of pronunciation that can be understood and that the presence of a foreign accent is not a problem unless it impedes understanding. Thus, insisting that monocentric intelligibility models are always linked to the perfect mastery of English pronunciation is unjustified. In classifying pronunciation studies, Levis (2016) differentiates between the intelligibility principle and the nativeness principle. It is as if that pluricentric intelligibility researchers intend to associate intelligibility with non-native to non-native interactions in English only.

Although intelligibility was suggested in the first place to reduce the negative effect of a foreign accent on speech production and perception, this term took a further sharp step to question and criticise the native English speaker concept and not only native English pronunciation rules in EFL teaching. For instance, Kachru (1986:94) asks “what role does a native speaker's judgement play in determining the intelligibility of non-native speech acts that have intranational functions in, for example, Asia or Africa?” Also, Widdowson (1994:85) claims that native English speakers “have no say in the matter, no right to intervene or pass judgement. They are irrelevant.” Moreover, Davies confirms that the concept of a native speaker is as vague and elusive as the concept of language proficiency (2003:173).

The second issue between the choice of LFC and MGI is statistical in nature. Pluricentric researchers argue that MGI limits interactions in English to native English speakers with an RP accent, which is restrictive as only three percent of the British English population speak in RP (Crystal, 1998:61). These researchers maintain that such a limitation in scope disregards the

vast number of interactions in English among non-native English speakers in intranational and international contexts. In other words, non-native English speakers attempting to communicate with an RP accent will be intelligible to a minority group of native English listeners. Along this line of thought, Jenkins (2003:125) suggests several reasons for not adopting RP as a pronunciation model. First, RP is spoken by a small number of native English speakers. Second, its social status is considered an embarrassment rather than a benefit. Third, RP is not easy to learn due to its complex vowel system, stress rule placements, the use of weak forms and spelling irregularities. Fourth, most teachers with other regional accents are unwilling to use RP for teaching purposes.

In response to the above argument, the issue of using RP as a model of pronunciation was already criticised by monocentric intelligibility researchers a long time ago. It started with Abercrombie (1949:120) who questioned the usefulness of RP for non-native English speakers. Abercrombie maintained that RP may be important for secret agents but not for EFL learners. Similarly, Gimson (2001) suggested modifying RP in relation to sound variations occurring in other native English varieties especially General American. More importantly, a pronunciation model should be judged in terms of its international validity rather than statistics. Gimson (2001:297) argues that RP is chosen as a pronunciation model because it has “wide currency, is widely and readily understood, is adequately described in textbooks, and has ample recorded materials available for the learner.” Further supporting this, Tench states that “all British textbooks designed for teaching English as a second or foreign language also invariably use Received Pronunciation” (199:15). The same opinion is held by Graddol (2006:114). Also, Gupta (2007:3) states that “there is not a single correct accent of English. There is no neutral accent of English. All speakers of English need to cope with many different accents and learn how to understand them.” In this respect, Gimson (2001:298) states that:

Certainly, the specification of RP as the property of a single social class within a restricted geographical location is no longer valid. [...] ‘General British’ is the type of RP commonly found amongst speakers of the middle generations and has been used and may in time supersede the abbreviation RP.

Thus, restricting pronunciation models to native English speakers will gain international validity and prevent developing mutually unintelligible varieties of English (Quirk,1990). The use of English among non-native English speakers brought the ownership of English as a third issue raised against the monocentric intelligibility approach. Proponents of the pluricentric

approach realised the legitimacy of non-native English varieties to establish their own reference pronunciation models. As proposed by Kachru (1985), this position explicitly considers non-native English varieties, in the Outer Circle, as institutionalised varieties of English. Moreover, by proposing the Lingua Franca Core (LFC), Jenkins (2000) considers English in the Expanding Circle as legitimate varieties of English.

In response to these claimed institutionalised non-native varieties of English, Quirk mentions that it is illogical to establish new English varieties based on learners' production errors. Instead, he suggests that such non-native English varieties should be called "interlanguages attempting to approach the standards of native English speakers' rules" (1990:18). Similarly, these assumed new varieties of English will be mutually unintelligible (Atechi, 2004:44). What pluricentric researchers propose will complicate rather than simplify matters for EFL learners. These learners will be exposed to many English varieties when they have already faced difficulty to come to terms with just one variety. Also, Levis (2005:371) adds a further argument against the LFC. Levis argues that "Jenkins' claim that the documented tendency of different L1 speakers to converge toward more internationally intelligible pronunciation does not seem to operate in EFL contexts" (2005:371). Furthermore, the entire notion of ELF has been criticised and described as loaded (Kachru, 2005, in Jenkins, 2006:162). Jenkins, herself, described her ELF approach as controversial. In this respect, Jenkins (2017:3) wrote that "despite the vast amount of empirical work and conceptual effort that has gone into ELF research over the past twenty years, it is important to point out that ELF remains controversial."

The last issue concerning the choice between Jenkins' (2000) LFC and Gimson (2001) MGI is related to non-native English speakers' attitudes towards English accents. This attitude reveals that non-native English speakers prefer native English speakers' pronunciation models (Munro and Derwing, 2011; Rashid, 2011). For example, Jenkins (2007:156) confirmed that teachers in EFL contexts generally preferred the RP or GA accent over non-native English accents. This was also supported by Groom (2012) who mentioned that "79.53% of learners preferred a native English speaker model for pronunciation and only 3.1% preferred a non-native English speaker model." Also, Ladegaard's study of Danish learners found that "RP appears to be the unsurpassed prestige variety" (1998:265). Conducting his study on Japanese EFL learners' preferences of native and non-native English varieties, Saito (2012:1071) found out that native English varieties were more positively evaluated than non-native English varieties. Also, the Japanese EFL learners preferred to learn English in its native language context rather than in

an international context. Thus, the Japanese EFL learners preferred native English speakers and their language settings over non-native English ones.

In the Iraqi EFL context, Rashid (2011:58) confirmed that:

Among the main findings of the experimentation carried out is that more than 66% of those learners have a preference of and a positive attitude towards the use of RP. This, however, necessitates an objective reconsideration of the present situation in Iraqi EFL classrooms concerning the preference of other English accents by the other learners.

As explained in section 1.7, the teaching of English in Iraq follows native English speakers' pronunciation rules as determined by the Ministry of Higher Education and Scientific Research (Rashid, 2011:64). According to Bamgbose (1998:5), the RP model is thoroughly codified and most teaching materials are based on it (see, Wilkins, 1972:29). In this respect, Tench (1981:15) writes that:

RP is the British accent that has been analysed in greatest detail. British description of pronunciation and British pronunciation dictionaries invariably use that form, and the pronunciation given in any other British dictionary is RP. It is associated with educated people and has been associated in the past and to a certain extent still today with influential people [sic] in politics, religion, business, and education.

In addition, Alqahtani (2013) mentions that Jenkins' (2000) LFC is not applicable to Arabic speakers of English for several reasons. First, pronunciation studies showed that Arab English speakers' attitudes were in preference to the use of native English speakers' pronunciation rules. Second, vowel qualities, not emphasised by Jenkins (2000), are proved to be more difficult for Arab speakers to produce than vowel quantity. For example, Arab speakers can produce and distinguish long vowels in a word like heat / hi:t /. However, in some short vowels, like /e/ and /a/, the quality of the vowels causes pronunciation problems. Third, Alqahtani (ibid) believed that the differences between English and Arabic stress and intonation patterns should not be deemphasised as suggested by Jenkins (2000). According to Alqahtani (ibid), the above differences between the sound system of Arabic and Jenkins' (2000) LFC were the main causes for Arabic accented English to sound aggressive. It seems that Alqahtani (ibid) missed one major point. In suggesting the LFC, Jenkins was interested in identifying the main pronunciation features which had negative impact on intelligibility. In other words, she was

interested in those pronunciation features which would prevent successful non-native to non-native interaction in English. However, Alqahtani was only concerned with listeners' subjective impression resulting from such sound differences. Also, the claim that Jenkins did not emphasise the suprasegmental feature of stress in her LFC was not valid. In comparing the pronunciation features of LFC and EFL, Zoghbor (2011:54) made it clear that tonic stress rather than word stress was critical for LFC (see table 3.3. Based on the arguments above, the present researcher adopts Gimson's (2001) MGI as the intelligibility pronunciation model used to assess the productive and perceptive intelligibility of Iraqi EFL learners.

3.6. Factors Influencing Intelligibility

In relation to the factors affecting intelligibility, several classifications have been proposed. Zhang (2009:1) categorises these factors into internal and external. Internal factors, which focus on non-native English speakers, include biological factors (i.e., age, ear perception and aptitude) and individual differences (i.e., personality, attitude, motivation, identity, individual efforts and goal setting). By contrast, external factors are related to the native language of learners, exposure and education. The factors affecting intelligibility have also been classified into linguistic and non-linguistic (Kenworthy,1987:279). Linguistic factors include knowledge of grammar, vocabulary and pronunciation, whereas non-linguistic factors include speaker - listener issues, familiarity with the accent, familiarity with the topic and context, the attitude of the listener towards the accent, physical fatigue and external noise (Tench, 1981:18).

The above account shows the wide range of variables involved in researching intelligibility. In relation to the scope of the factors involved and their emphasis, Derwing and Munro (2005:391) suggest that attention should focus on investigating those factors which are present at any communicative event regardless of the definition and approach adopted in the investigation of intelligibility. In line with this, I have chosen to investigate the intelligibility of Iraqi EFL learners' speech production and perception in relation to foreign accent, as a speaker characteristic, and accent familiarity, as a listener characteristic. The following is a review of the related studies dealing with the effect of these two factors on intelligibility. It starts with the studies focusing on the effect of foreign accent on intelligibility followed by the studies focusing on the effect of accent familiarity on intelligibility.

3.6.1. Foreign accent and intelligibility studies

For Trask (1997:3), the term accent represents a distinct way of articulating a certain language. Crystal (2008:3) defines accent as "the cumulative auditory effect of those features of pronunciation that identify where a person is from, regionally or socially." By contrast, the term foreign accent (FA) is defined as "the ways in which a foreign language speaker's speech differs from the local variety of English and the impact of that difference on speakers and listeners" (Derwing and Munro, 2009:476). These definitions of the terms accent and foreign accent indicate two distinct approaches to the study of accented English: as a variation or as a deviation. Accented English is viewed as a variation when pronunciation reference points are made in relation to what Jenkins (2000) called institutionalised non-native varieties of English (see section 3.4.). By contrast, accented English is viewed as a deviation when its pronunciation features are determined according to native English pronunciation norms (see section 3.3.).

The present study considers Iraqi EFL learners' accented English as non-native English speech which deviates from native English pronunciation. This speech is judged according to Gimson's (2001) MGI. This MGI pronunciation model is based on the pronunciation features of RP and General American (GA) (Gimson, 2001). Iraqi EFL learners' accented English is considered intelligible if it does not deviate too far from Gimson's (2001) MGI. In this study, the effect of foreign accent is restricted to the segmental aspect of phonology. This approach to accented English resembles Jenkins' (2000:18) distinction between a model and a norm. Jenkins (*ibid*) emphasise that a norm should be associated with the concepts of correctness and invariability. The norm should be followed irrespective of language use. By contrast, a model should be associated with the concepts of guidance and variability. The model should provide a point of reference and pronunciation will be acceptable as far as it does not deviate too far from that point of reference.

Based on my survey of the literature on intelligibility, the studies which focus on the effect of FA on intelligibility can be grouped into three categories: studies focusing on the overall effect of FA on intelligibility, studies focusing on the effect of the suprasegmental aspect of FA on intelligibility and studies focusing on the effect of the segmental aspect of FA on intelligibility. Although this study investigates the effect of the segmental aspect of FA on intelligibility, I have also reviewed some of the studies in the first two categories. This is done for two reasons: I want to present a comprehensive review of the literature regarding the effect of FA on

intelligibility and I want to know whether the effect of FA on intelligibility varies in relation to the context of English use. Each of the above categories will be presented in relation to their studies and evaluated in terms of findings and relevance to this study.

1. The overall effect of foreign accent on intelligibility

This category of studies reviews related research dealing with the overall effect of FA on intelligibility. Based on my survey of the literature, the most frequently consulted study in this regard was the one conducted by Munro and Derwing (1995). Most subsequent researchers acknowledged the finding arrived at by these researchers and adopted their methodological framework (see Kim, 2008 and Kashiwagi and Synder, 2008). In their study, Munro and Derwing (1995) investigated whether the presence of FA in ESL learners' speech affected the intelligibility of that speech to native English listeners. In the study, intelligibility referred to how much a listener understood of an utterance and was measured by an orthographic transcription task. FA referred to how different the ESL learners' accent was from the accent of native English speakers and it was measured by a rating scale. The participants of the study were 18 native English listeners who assessed the recorded narrative speech of ten Mandarin ESL speakers for intelligibility and FA. The Mandarin ESL speakers were of high proficiency levels in English as assessed by their TOEFL scores. Their speech samples were recorded while they were describing the events of a story picture. The native English listeners were all educated. They had some background knowledge in linguistics and they reported no hearing difficulties. The researchers measured the responses for each dimension independently. When correlating the results, the findings revealed that the correlation between intelligibility and FA was partially independent. Although the Mandarin speakers were rated to have a strong foreign accent, that accent did not intervene with intelligibility. The researchers concluded that the scores assigned to intelligibility did not correlate with the scores assigned to FA. This means that understanding non-native English speech was not influenced by the presence of FA. This finding was re-emphasised in all subsequent research done by these researchers in ESL contexts (see Derwing and Munro, 2005 and 2009 and Munro and Derwing, 2008 and 2011).

The above study was replicated by researchers in other contexts of English use involving participants of varying proficiency levels. These replication studies arrived at similar findings regarding the overall effect of FA on intelligibility. For example, Kim (2008) emphasised that advanced ESL speakers and listeners of a high proficiency level could understand one another

despite their accented English. In this respect, Kim (ibid) extended the finding arrived at by Munro and Derwing (1995) to cover interactions in English where both the speakers and the listeners were advanced ESL learners. Similarly, Kashiwagi and Synder (2008) conducted the study in EFL contexts using intermediate EFL level speakers. The finding of the study revealed a quasi-independent relationship between intelligibility and FA and indicated that a strong accent did not cause intelligibility failure.

The above overall finding of the studies sounds a bit confusing at first sight. When defining the term FA, I have mentioned earlier that this term is associated with sound differences or deviations from a target language. These sound deviations can be either phonetic or phonemic. A phonetic deviation modifies the pronunciation of a sound without changing it to another different sound, whereas a phonemic deviation changes the sound into a different sound category (Derwing and Munro, 2009:476). The issue to emphasise here is how the listeners could understand the speech even when it was rated as strongly accented i.e. include many sound deviations. In my opinion, the above finding should be limited to ESL contexts where the speakers are advanced level learners. For such speakers, I regard the sound deviations found in their speech as mostly phonetic rather than phonemic. What supports this position is that these learners have reached a pronunciation level which can be easily understood by native and non-native English listeners. Another evidence supporting my position is that most researchers consider the type of English spoken in ESL contexts as an institutionalised variety of English in their own right (see section 3.4). Moreover, the above finding was re-emphasised by Munro and Derwing in all their subsequent research with advanced ESL learners (see Derwing and Munro, 2005 and 2009 and Munro and Derwing, 2008 and 2011).

The above justification cannot be suggested for the same finding arrived at by Kashiwagi and Synder (2008) with intermediate EFL speakers. Based on assessing their research, I cannot say that most of the sound deviations, segmental and suprasegmental, were just phonetic. As will be seen in point 3 below, all pronunciation studies conducted in EFL contexts emphasised that a strong foreign accent was correlated with segmental phonemic deviations in EFL learners' speech. For this reason, the present study limits its scope of investigation to examine the overall segmental effect of FA on intelligibility and determine the phonemes which negatively affect the productive intelligibility of Iraqi EFL learners. This clearly shows that the present study restricts the segmental effect of FA to the production aspect of intelligibility. This entails that the definition of intelligibility adopted for this particular aspect of research is mainly limited

to the ability of Iraqi EFL learners to produce the segmental phonemes of English in accordance with the rules set by Gimson's (2001) MGI. Hence, FA and intelligibility are investigated from the speaker's point of view.

One may argue that what makes the speech intelligible is related to the type of listeners involved. In all the above studies, the listeners were advanced native and non-native English listeners who could exploit the linguistic and non-linguistic context. This use of top down strategies could be employed to infer the words intended by the speakers even if these words were mispronounced (Zaghbour, 2011). This justification is weak within the context of the above studies simply because the listeners were requested to write using ordinary spelling exactly what they heard. This phonetic or auditory task excludes the possibility that the listeners have employed top down strategies to infer the intended words, unless they did not follow the researchers' instructions. This relationship between intelligibility and listeners' orthographic transcription task will be explained in detail in point 3 below.

To conclude, the present researcher believes that the above finding should be restricted to ESL contexts involving participants of a high proficiency level in English. In EFL contexts, however, the focus should be to investigate this overall effect at the segmental aspect of FA. Another issue relevant to this study is related to the definition of intelligibility adopted. When dealing with the effect of FA accent, the present study defines intelligibility in relation to the speaker. This means that intelligibility refers to the ability of Iraqi EFL learners to produce the most distinctive features of the sound system of English in a way that the intended spoken words can be easily recognised.

2.The suprasegmental effect of foreign accent on intelligibility

In this category of studies, the focus shifts from the identification of the overall effect of FA on intelligibility to the identification of those features of FA which negatively affect intelligibility. The identification of these pronunciation features of FA differs according to the context of interaction in English, ESL or EFL. In ESL contexts, the findings of related studies emphasise the importance of stress as a suprasegmental feature to intelligibility (Hellmuth, 2014 and Anderson-Hsieh 1995:17). This priority of the suprasegmental feature of FA was investigated by several researchers such as Field (2005), Atechi (2004) and Hahn (2004). These

researchers followed the same methodological procedure in the sense that advanced ESL learners were requested to talk on a topic from their choice or read from pre-prepared materials. Their speech and reading were recorded then presented to the native English listeners to assess for intelligibility using a word transcription task. The task required the listeners to write in ordinary spelling what the speakers said. After collecting the data, the researchers measured the intelligibility of the speech and identified the phonemes which caused intelligibility failures. After using the appropriate statistics, they found out that stress as a suprasegmental feature was responsible for most intelligibility failure. The most interesting point regarding the studies conducted by the above researchers is that the finding was arrived at regardless of the definition of intelligibility adopted and the type of speech data elicited.

What distinguishes the above studies from the ones focusing on identifying the overall effect of FA is that stress as a suprasegmental feature of FA has been already decided on and presented to the listeners in different manipulated forms. The decision on these features was based on identifying potential pronunciation problems based on the Contrastive Analysis Hypothesis. In the present study, the selection of the segmental features of FA depends on the three-difficulty levels of sound production suggested by the moderate version of Contrastive Analysis Hypothesis and Flege's (1995) Speech learning Model (SLM). According to Flege (1995), learning the English segmental phonemes can take three routes; different phonemes are thought to be easy to learn, identical phonemes are thought to be the easiest to learn and partially similar phonemes are thought to be the most difficult to learn. These predictions will be tested in this study in the productive intelligibility test (see section 3.8.2).

Although the effect of stress on intelligibility was common in ESL contexts, it could be extended to EFL contexts especially with advanced EFL participants. For example, Cruz (2003) investigated the effect of pronunciation errors on the intelligibility of advanced Brazilian EFL learners to native English listeners. Two types of data were gathered: quantitative and qualitative. Quantitative data were obtained by assessing intelligibility on a six-point Likert scale, while qualitative data were gathered through three open-ended questions. The findings revealed a significant correlation between word stress errors and intelligibility ratings.

In the present study, I chose to exclude the investigation of the suprasegmental effect on intelligibility for three main reasons. First, most pronunciation studies emphasise that segmental features are prioritised over suprasegmental features in the EFL contexts (see point 3 below). Second, investigating the suprasegmental effect will complicate the research in terms of the data collected, the methodology used, and the analysis conducted. Third, the time limit imposed on the research is another reason behind excluding the suprasegmental effect. Although the suprasegmental effect on intelligibility was out of the scope of this study, the review of the studies above is important for several reasons: it provides a comprehensive account of the literature written on intelligibility, which in itself is valuable. Also, it shows that most pronunciation features affecting intelligibility in ESL contexts are related to suprasegmental features rather than segmental ones, indicating a limitation of my research. Most importantly, it shows that word transcription and rating scales are the most common measurement tools used in the investigation of intelligibility. Finally, FA induced suprasegmental effects on intelligibility are clearly an important topic for future research in the EFL contexts.

Based on my phonological training, I could hear misplacement of stress in some of the words produced by the 12 Iraqi speakers. In pronunciation, stress is determined based on differences in length and loudness of syllables (Roach, 2000). For example, the word material is produced as /ma:ti:rəl/ by speaker 3 in the utterance *know how to put the materials in their right place*. However, I could not associate directly the mispronunciation of stress to the changes affecting the segmental phonemes because I need to have made some manipulations in the speech data to assess that effect specifically. Also, I was interested in investigating the effect on understanding the literal meanings of words and utterances. When investigating stress, the focus will shift to other types of meanings which are out of the scope of this study. For these reasons, I suggested the effect of stress as a potential topic for further research.

3.The segmental effect of foreign accent on intelligibility

In EFL contexts, most reviewed pronunciation studies emphasise the importance of the segmental aspect of FA to intelligibility. These studies can be grouped into two categories. The first category is concerned with reviewing the segmental effect of FA on intelligibility in EFL contexts other than the Iraqi context. The second category is concerned with reviewing the studies dealing with the above effect in the Iraqi EFL context.

A. The segmental effect of FA on intelligibility in EFL contexts

Several studies were conducted in EFL contexts emphasising the importance of the segmental features of FA to intelligibility. The studies can be divided into two types depending on the scope of their investigation. The first type of studies investigated the overall segmental effect of FA on intelligibility. For example, Anderson-Hsieh (1995), Kirkova-Naskova (2010) adopted the same methodology. In their studies, the non-native English speech was recorded and presented to the listeners to be assessed for intelligibility and FA. Intelligibility was assessed using a word transcription task, whereas FA was assessed using a rating scale. After correlating the results of intelligibility with those of FA, the researchers found out that errors at the segmental level had an overall negative effect on intelligibility. In this respect, a strong accent was associated with intelligibility failures in EFL contexts. Although Munro and Derwing (2006) used the same methodological procedure in their study, they were interested in identifying which particular segmental phonemes had the most negative effect on intelligibility. For this purpose, they divided the segmental phonemes of English into high and low functional load phonemes following Brown's (1988) list of segmental phonemes. These phonemes were then put into sentences to be read by non-native English speakers. After recording the sentences, they were presented for native English listeners to be assessed for intelligibility and rated for FA. The findings of the study revealed that the sentences which contained high functional load pronunciation errors caused intelligibility failure.

In almost all the intelligibility studies in EFL and ESL contexts, I have observed that the most common methodology used is the one suggested by Munro and Derwing (1995). In their study, a rating scale was used to measure FA, whereas a word dictation task was used to measure intelligibility. I believe that this type of methodology serves a particular purpose and it should not be extended beyond that purpose. When this type of methodology was first used, Munro and Derwing (*ibid*) aimed to examine whether the presence of FA in the speech produced by ESL learners had negative impact on its intelligibility to native English listeners. In point one above, I have explained why the finding arrived at should be restricted to advanced level ESL learners. In this section, I want to clarify one major issue related to the use of word dictation or transcription tasks and the definition of intelligibility adopted or the type of speech data used in the studies. It was shown by the reviewed studies that word transcription was used by most researchers regardless of the definition and the type of speech data elicited in the studies (see Derwing and Munro, 2005,2009; Munro and Derwing, 2006, 2008 and 2011; Field, 2005;

Atechi, 2004 and Kirkova-Naskova (2010). The issue here is why researchers define and investigate intelligibility in different ways when the main measurement tool used is a phonetic one i.e., a word transcription task. In other words, a reader may raise the question as to why a researcher uses a phonetic task when intelligibility is defined according to understanding. In my opinion, if intelligibility is defined in relation to listener's understanding, there are two options available for a researcher. The first option is to interpret the word transcription task as consisting of three components: phonetic, linguistic-contextual and meaning components (see section 3.9). This interpretation will give the listeners the benefit to exploit the linguistic and non-linguistic context to understand foreign accented English. The second option is to develop or modify existing rating scales to be used in measuring intelligibility. In this study, I adopt the second option when intelligibility is defined in relation to understanding (see section 3.6.2). By contrast, the word transcription task, as a phonetic one, is used when intelligibility is defined in relation to the production and recognition of the formal phonetic properties of speech. For this aspect of research, I adopt the word transcription as a phonetic one because I am investigating intelligibility from the speaker's point of view. My focus in this particular aspect of the study is to investigate the effect of FA on the productive intelligibility of Iraqi EFL learners.

The second type of studies focused on identifying which aspect of the segmental features of FA affected intelligibility the most, vowels or consonants. In this type of research, the findings were not based on correlating the results of intelligibility with those of FA. Rather, the researchers adopted a specific methodology using a word transcription task. These researchers first measured the intelligibility of non-native English speech and then counted the frequency of segmental errors which caused intelligibility failure. For example, the studies by Rogers (1997), Nikolova (2012), Almbark (2012) and Hassan (2014) shared the common finding that the mispronunciation of vowels affected the intelligibility of EFL learners' accented English. In their studies, the non-native English speech was elicited based on a prior identification of the pronunciation difficulties these learners may face in the learning of the sound system of English. These pronunciation difficulties were based on contrasting the sound system of the two languages under investigation. The speech generated were recorded and then presented to the native English listeners to be assessed for intelligibility. After applying the appropriate statistics, the researchers reached to the conclusion that the mispronunciation of vowel phonemes was responsible for intelligibility failure.

The main difference between these types of studies and the ones which investigated the overall segmental effect on intelligibility was that the speech stimuli presented to the listeners were controlled with respect to the segmental features. In all the studies, these features were reflected in the speech data produced by the speakers. They were decided upon by adopting the principles of CA. In the present study, the choice of the segmental features of FA is done in relation to the moderate version of CA and the difficulty levels suggested by Flege's (1995) Speech Learning Model (see section 3.8 and 3.9 for further information).

The above findings are relevant to the present investigation of the intelligibility of Iraqi EFL learners' accented English in three ways. First, this study investigates the overall productive intelligibility of Iraqi EFL learners and identifies the phonemes which negatively affect intelligibility. For this purpose, the study uses a speech production test. This test consists of three elements: the speakers, the materials and the measurement tool (see section 4.5). Second, the segmental features of FA will be analysed in terms of the moderate version of CA in the quantitative aspect of the study, whereas these features will be analysed in terms of the functional load principle in the qualitative aspect of the study. Third, the speech data which will be read and listened to by the Iraqi EFL learners will be selected based on the existence of the most distinctive segmental phonemes of English (see section 4.5).

B. The segmental effect of FA on intelligibility in the Iraqi EFL context

In the Iraqi EFL context, the principle of intelligibility is absent in pronunciation instructions and research. The absence of intelligibility in the Iraqi EFL context is confirmed by Rashid (2009) and Khudhair (2015). For example, Rashid (2009:43) revealed that the concept of intelligibility was unheard of in the Iraqi EFL classrooms. In her article, Rashid (2009) arrived at this finding by asking 17 Iraqi EFL university teachers one open-ended question only. The question used to collect the data was as follows: "In your opinion what does 'intelligibility' (that is students' speech intelligibility) mean in our classrooms, and particularly phonological intelligibility?" Based on the teachers' responses, the researcher concluded that intelligibility was wholly ignored in the Iraqi EFL pronunciation classrooms.

An attempt to investigate intelligibility in the Iraqi EFL context was carried out by Khudhair (2015). In his article, the researcher focused on the intelligibility of 50 Iraqi university students. A list of isolated words containing potential pronunciation features were read by the Iraqi EFL speakers. The listener was the researcher himself. He described himself as a semi-native English speaker with an RP accent. The researcher used a word dictation task with a certain scoring scheme to measure the intelligibility of Iraqi EFL learners and identify the phonemes causing intelligibility failure. The findings of the paper revealed that the mispronunciation of vowel phonemes was the main cause of intelligibility failure.

The main objection to the above study is that the researcher relied on the nativelikeness principle, which emphasises the perfect mastery of RP. In the above paper, RP was the basis on which students' production was judged either right or wrong. This goes against all current research on intelligibility. As I mentioned earlier, a research on intelligibility is either based on native or non-native English pronunciation. If a researcher chooses an intelligibility approach based on native English pronunciation, the researcher should clearly define his approach. Hence, to use RP as the pronunciation model places the study out of the intelligibility construct. For this reason, Kudhair's study is not relevant to the present investigation of the intelligibility of Iraqi EFL learners' accented English.

Apart from Rashid's (2009) article, the bulk of pronunciation research conducted in Iraq has clearly emphasised the perfect mastery of an RP accent. These pronunciation studies could be classified as either contrastive or error analysis in nature. As far as contrastive analysis studies were concerned, several studies were conducted in Iraq. The primary aim of such studies was to predict the pronunciation problems which may face Iraqi EFL learners. For example, Al-Hamash (1969) compared the sound systems of standard English and Iraqi Arabic to find the areas of difficulty that Iraqi EFL learners are expected to face when learning English. The researcher relied heavily on the theory of interference. The main conclusion arrived at by the researcher was that sounds which were different in both languages were the most difficult to learn. The study was deeply rooted in the Contrastive Analysis Hypothesis, which claims that through identifying the areas of difference and similarity between two systems one can predict where learners of the target language will encounter problems. Similar contrastive studies were conducted by Al-Juwari (1997), Mahud (1998) and Ahmed (2000).

As far as Error Analysis studies were concerned, Wadi (1987) attempted to identify the errors made by second- and fourth-year college students of English in the pronunciation of English vowel sounds. The findings of the study indicated that students made errors in all the areas of the English vocalic system. The researcher concluded that the errors committed were systematic, frequent and identical for both second- and fourth-year students. The study also revealed that the English vocalic system in general and diphthongs especially were problematic for Iraqi EFL students. The researcher mentioned several reasons for this, including not enough pronunciation teaching, the complications of the English vocalic system, the influence of the mother tongue and a lack of teaching strategies. Similar error analysis studies were conducted by Al-Haeri (1973), Al -Abdely and Thai (2016) and Al-Owaidy (2017).

Except for Rashid's (2009) article, all pronunciation studies conducted in Iraq follow the perfection goal in mastering the sound system of RP. All the findings pointed out that most errors were made in the production and perception of vowel phonemes. Al-Abdely and Thai (2016) restricted these errors to pure vowels and their cause to L1 interference and proficiency level. Ahmed (2000) was interested in the types of errors occurring in both pure vowels and diphthongs. Findings and explanations of the sources of pronunciation errors were investigated by Al-Haeri (1973) and Wadi (1987). Mahud (1998) and Al-Hamash (1969) were interested in identifying potential pronunciation difficulties for Iraqi EFL learners through contrasting the sound system of English and Arabic.

Although the above studies focused on the perfect mastery of the sound system of English, they share two characteristics with the intelligibility-based pronunciation studies. First, the segmental phonemes were collected based on the CA. Second, vowel phonemes were the major cause of problems in sound production and perception. In reviewing the pronunciation studies in and out of Iraq, I was interested in identifying several issues which will form the basis of my research. First, I wanted to know which goal of pronunciation most researchers recommend for the teaching of pronunciation. In this respect, I have discovered that intelligibility is the recommended goal. Second, I wanted to know which aspect of FA affects intelligibility the most in EFL context. I have found that segmental, especially vowels, was identified as more important to intelligibility than suprasegmental. Furthermore, I wanted to know how the speech data were collected for intelligibility purposes. I have found that these data were mainly collected based on the CA. Also, I wanted to know the common measurement tools used for

assessing intelligibility and FA. I have found out that word transcriptions and rating scales were the most common ones.

Based on the idea that an investigation builds on prior knowledge and proceeds further, the purpose of the present research is to combine pronunciation studies conducted in Iraq with up-to-date pronunciation principles and practices by investigating the intelligibility of Iraqi EFL learners' accented English. The focus is on assessing the intelligibility performance level of Iraqi EFL students who will be teachers of English and identifying the types of phonemic contrasts these students make according to a principle compatible with the concept of intelligibility, namely the functional load principle. The following section introduces the studies related to the effect of accent familiarity, as a listener characteristic, on the intelligibility of foreign accented English.

3.6.2. Accent familiarity and intelligibility studies

For using English in its international context, several researchers emphasise the importance of accent familiarity (AF) to speech intelligibility. For example, Gimson (2001) emphasises that successful interaction in the international context of English requires EFL learners to master the basic English phonemic distinctions and to tune in to the speaker's accent. The effect of a foreign accent on intelligibility was explained in the previous section. In this section, the effect of AF on intelligibility will be examined from the listener's perspective. In this study, accent familiarity is defined as "a speech perception benefit developed through exposure and linguistic experience" (Browne and Fulcher 2016:39).

The basic assumption of AF is that a listener who has more exposure and linguistic experience of the speaker's accent will understand more of what is said compared to the one who does not have such a benefit. In this respect, different studies have been conducted to establish this perception benefit and to investigate its effect on intelligibility (Algethami, Ingram and Nguyen, 2010; Browne, 2016; Derwing and Munro, 2005; Hardman, 2010; Kim, 2008; Jaber and Hussein, 2011; Gass and Varonis, 1984; Carey et al. 2012). These studies can be divided into two categories. The first category of studies confirms the effect of accent familiarity on intelligibility, whereas the second category rejects this effect.

1. Studies confirming the effect of accent familiarity on intelligibility

This category reviews the studies which confirm the facilitating effect of accent familiarity on intelligibility. Based on my survey of the literature, the above effect was confirmed either by measuring AF and intelligibility separately then correlating the results or by manipulating the variable of AF when measuring intelligibility. As far as correlation is concerned, the conduct of the studies was similar to the ones which dealt with the overall effect of FA on intelligibility. In this regard, non-native English speech was recorded and presented to native and non-native English listeners to be assessed for intelligibility and AF. The results were then correlated to arrive at the finding that listeners' accent familiarity affected speech intelligibility. This conduct of the studies was adopted by most researchers (see Gass and Varonis, 1985; Bent and Bradlow, 2003; Bogorevich, 2018 and Browne, 2016). In all the studies, intelligibility was assessed by a word transcription task, whereas AF was rated in various ways. For example, Bent and Bradlow (2003) used a word familiarity rating, Ludwig (2012) used reaction time to rate the effect of AF and Browne (2016) used a rating scale based on listeners' perceived difficulty in understanding.

The use of correlation studies was criticised in section 3.6.1 especially when intelligibility was defined in relation to understanding. Also, measuring AF according to listeners' efforts is confused with the assessment of other speech dimensions like comprehensibility (Derwing and Munro, 2005) and perceived intelligibility (Beinhoff, 2014). In this respect, researchers may not be assessing AF but the two speech dimensions of comprehensibility or perceived intelligibility. Moreover, my interpretation of perceptive intelligibility follows the one proposed by Gimson (2001), Abercrombie (1949) and Tiffen (1974). These researchers consider listeners' effort as part of the definition adopted for preceptive intelligibility. For these reasons, the present study investigates the above effect by manipulating the variable of AF. In this study, the term AF is interpreted in relation to the native language background of the participants and their linguistic experience. Based on this interpretation, three levels of AF are distinguished: matched, mismatched and unfamiliar. According to Bent and Bradlow (*ibid*), matched accent familiarity refers to interlocutors who share the same native language, whereas mismatched accent familiarity refers to interlocutors who have different first language backgrounds but significant linguistic knowledge with the target language and unfamiliar refers to the absence of accent familiarity.

Following the above approach, the perceptive intelligibility of Iraqi EFL learners was measured by asking them to rate their understanding of one English text spoken by three English speakers who represent three different AF levels. In this respect, AF was manipulated by having one English text spoken by three English speakers who represent three different AF levels. Good examples for this approach were the studies conducted by Field (2005) and Hahn (2004) when investigating the effect of stress on intelligibility. With regard to the effect of AF, Carey et al. (2011) equated AF with the amount of exposure to the target language. They divided the listeners in their study into those with prolonged exposure and those with little exposure to the accent. Measuring intelligibility across these two levels of AF, the findings suggested that listeners with prolonged exposure understood better than listeners with little exposure.

It is worth repeating here that by understanding I am referring to the literal meanings of words and utterances. Grasping this literal meaning requires listeners' mastery of the three components of perception: phonetic, linguistic and meaning components. Also, I should emphasise here that intelligibility is considered in relation to the listeners. This means that the Iraqi EFL learners' perception will be intelligible if they can understand with ease the literal meaning of the English speech they listened to.

2. Studies revealing no effect of accent familiarity on intelligibility

In this category, several studies were conducted arriving at findings which contradict the facilitating effect that AF had on intelligibility. For example, Munro and Derwing (2006) observed opposing evidence related to matched and mismatched benefits emphasised by Bent and Bradlow's (2003) study. In their study, 40 speakers from different language backgrounds were assessed by 48 listeners from the same language backgrounds for AF and intelligibility. AF was assessed by a rating scale, whereas intelligibility was assessed by a word dictation task. Although the findings revealed a matched accent familiarity benefit between native Japanese listeners and the Japanese English speakers, this speech intelligibility benefit was not found between Cantonese English listeners and speakers. Similarly, there was a mismatched accent familiarity benefit between Mandarin listeners and Japanese speakers. However, this speech intelligibility benefit was not observed between Spanish speakers and Polish listeners.

In a similar vein, Algethami's (2011) study revealed a small and not statistically significant difference between native and non-native speakers of English when correlating the scores assigned to intelligibility and AF. In his study, 19 native speakers of Australian English and 19 non-native Saudi speakers of English listened to 23 English sentences produced by ten Saudi speakers of English. Based on the mean ratings by native English listeners, the Saudi speakers fell into two groups: advanced level and low-level speakers. These Saudi speakers were instructed to do a grammatical paraphrasing task. They had to change sentences into other meaning equivalent forms like changing active sentences into the passive. These grammatical tasks would divert the speakers' attention, causing them to focus on content rather than on pronunciation. The recorded sentences were then presented to native and non-native listeners of English to be assessed for intelligibility. Intelligibility was judged by an orthographic transcription task. The results showed a small and not statistically significant difference between native and non-native ratings. Thus, accent familiarity had no effect on the intelligibility of English speech.

To account for the possible factors which may intervene with the effect of AF, some researchers suggest that non-native English speech will be intelligible due to proficiency level and the clarity of the acoustic signals. These researchers adopted almost similar methodology and data collection tools. For example, both Xie and Myers (2017) and Wolfswinkler and Reinisch (2016) confirmed that the speech intelligibility benefit was due to the existence of invariable acoustic signals rather than the effect of AF. In their study, Xie and Myers (2017) tested whether native English listeners' exposure to the target language was the main factor for intelligibility success or there were other factors involved. The researchers used single words spoken by a single Chinese English speaker and other words spoken by multiple Chinese English speakers. The native English speakers' success was judged on their ability to identify new words. By examining the acoustic signals in the speech of the two groups of speakers, the researchers concluded that the speech intelligibility benefit was due to the existence of invariable acoustic signals rather than exposure to language. Using a similar approach, Smith (1987) argued in his research that the speech intelligibility benefit of AF was due to the proficiency level in English. Highly proficient non-native English speakers were understood more than less proficient speakers.

I believe that the discrepancy among the above findings could be related to how researchers conceptualise the term AF. For example, Browne (2016) regards linguistic knowledge and language exposure as two basic components of AF. By contrast, other researchers like Smith (1987) and Xie and Myers (2017) limit the term AF to language exposure only. In this sense, they attempt to exclude the criterion of linguistic experience from AF construct. The above different interpretation of AF will definitely lead to opposing research findings. In the present study, I follow Bent and Bradlow's (2003) interpretation of AF as having two components: linguistic knowledge and language exposure. This conceptualisation distinguishes three accent familiarity levels: matched, mismatched and unfamiliar.

Section 3.6 above was mainly concerned with reviewing two types of research on intelligibility. The first type reviews the studies dealing with the effect of foreign accent on intelligibility. The second type reviews the studies dealing with the effect of accent familiarity on intelligibility. In both types of research on intelligibility, there were several underlying principles governing the selection and analysis of the pronunciation features which may hinder the intelligibility of foreign accented speech. Some of these mentioned language learning principles were the Contrastive Analysis Hypothesis and the principle of Functional Load. For example, Contrastive Analysis was used in most of the studies to select the types of phonemes which were predicted to cause difficulties in speech production. By contrast, the Functional Load principle was used to identify and classify the pronunciation errors based on their communicative value. From this perspective, the decision on prioritising the teaching of a difficult phoneme lies in the communicative value of the phonemic contrast itself.

Another principle underlying the review of the above studies is related to the use of the term accented English. In the EFL context, accented English is always associated with the interlanguage principle. The term interlanguage emphasises a norm dependent variety of English which "attempts to approach the standards of native English speakers' rules" (Quirk, 1990:18). These and other related language learning principles form the bases upon which most related studies relied on in their investigation of the intelligibility of foreign accented English. The present study is no exception. The following section elaborates on these language learning principles and shows their relevance to the present study.

3.7. Principles of Language Learning

There are two distinct contexts for learning a target language: English as a foreign language (EFL) and English as a second language (ESL). An EFL context refers to a conscious process of learning a language whereby learners receive formal language instructions at school. Traditionally, the terms language learning and foreign language are used in such contexts (Krashen, 1980:10). By contrast, an ESL context denotes an unconscious process whereby learners acquire a target language in its natural context (Gass and Selinker, 2008:5; Ellis, 1985:113). The main reason for making the above distinction is to emphasise that the degree and nature of a foreign accent in non-native English speech are different in EFL and ESL contexts.

In ESL contexts, the range of facilitating factors which are available to non-native English speakers could lessen the effect of foreign accent to the extent that their speech production could be described as nativelike English. This is not the case in EFL contexts, where the effect of FA is clear via phonological transfer. The more pronunciation features an EFL learner transfers in the production of a foreign language the stronger the FA is. In this section, the underlying principles governing the selection and analysis of the pronunciation features which affect the various aspect of the intelligibility of foreign accented speech will be presented. These include Contrastive Analysis Hypothesis (CA), interlanguage, Functional Load (FL) and Communication Strategies (CS).

3.7.1. Contrastive analysis hypothesis

Gass and Selinker (2008:96) consider Contrastive Analysis (CA) as “a way of comparing languages in order to determine potential errors for the ultimate purpose of isolating what needs to be learned and what does not need to be learned in a second- language-learning situation.” This linguistic comparison is important for learning and teaching purposes. Lado (1957) mentions that “we can predict and describe the patterns that will cause difficulty in learning, and those that will not cause difficulty, by comparing systematically the language and culture to be learned with the native language and culture of the student” (ibid: vii). Fries (1945) maintains that “[t]he most efficient materials are those that are based upon a scientific description of the language to be learned, carefully compared with a parallel description of the native language of the learner” (ibid:9). Thus, CA is based on the principle of language transfer.

Learners tend to transfer the rules of their native language on to the target language (Lado, 1957:2). Westermann and Ward (1990:1) highlight this issue by stating that “the learner of a new language, unless he is exceptionally gifted or unless he has a special training, transfers into the new language all the speech habits of his mother tongue.”

Three versions of CA are identified in the literature: a strong version, a weak version and a moderate version. The strong version of CA claims that all learning difficulties can be predicted on the basis of the linguistic differences between the contrasted languages (Van Els, 1984:50). Wardhaugh (1970:123) later toned down this claim into a weak version of CA. Wardhaugh (ibid) states that not all errors that learners make can be predicted by the strong version of CA. He argues that interference is just one of the factors leading to the occurrence of errors (see also Littlewood, 1984:21). Oller and Ziahosseiny (1970) propose the moderate version of CA. According to this version the similarities between native and target languages are the main sources of errors. These researchers suggest that similar linguistic aspects of two languages could cause more production and perception confusion than different linguistic aspects.

When applying this transfer principle to Iraqi EFL learners’ speech, the phenomenon of diglossia raises a significant issue. It has already been stated that two Arabic varieties are in use in the Iraqi context: Modern Standard Arabic (MSA) and Iraqi Arabic (IA). The first one is restricted to formal contexts, whereas the latter is used in informal contexts. Thus, the question which needs an answer is which language variety Iraqi EFL speakers transfer from. This is important because it leads to a detailed description of the sound system of the variety the learners transfer from. In his study on different Arabic speakers, Zoghbor (2010:47) mentioned that language transfer results from both language varieties. Zoghbor (ibid) chose to contrast English with MSA and refer to other varieties when necessary. Zoghbor (ibid:47) emphasises that “while this research involves MSA in contrastive analysis (CA) with the LFC, it makes no claim that Arab learners necessarily transfer from MSA rather than NSA in learning English pronunciation.”

In the present study, the researcher chooses to contrast the sound system of English with Iraqi Arabic because the context of the study is the Iraqi EFL context and IA is the prevailing spoken variety in the country. Despite this, a reference to MSA will be made when necessary. Having decided on where language transfer mostly occurs, the sound system of IA will be reviewed

based on how similar and different it is from Gimson's (2001) MGI, a modified version of RP. For more details about this comparison and its purpose, the reader is referred to section 3.9.

3.7.2. Interlanguage

The status of foreign accented English can be considered as a dynamic and developmental interlanguage system. Selinker defines interlanguage as “a separate linguistic system based on the observable output which results from a learner's attempted production of a target language norm” (1972:214). Further to this, Larsen-Freeman and Long (1991:60) state that interlanguage is “a continuum between the L1 and L2 along which all learners traverse.” This description of interlanguage as dynamic and developmental differs from the one offered by pluricentric intelligibility researchers, who view interlanguage as fossilised and therefore as having reached the status of a dialect in its own right (Kachru, 2005:162). In this respect, Kachru mentions that “theoretically, research in SLA could benefit from re-evaluating the usefulness of the concepts of native speaker, linguistic competence, transfer, interlanguage, and fossilization in the context of acquisition of additional languages” (2005:162). In the present study, Iraqi EFL accented English is considered as an interlanguage system which is dynamic and developmental rather than fossilised. From the intelligibility viewpoint, this means that Iraqi accented English can be improved by explicit pronunciation instructions and practice.

3.7.3. Functional load

Kirkpatrick et al. (2008:360) state that intervention when a learner's pronunciation is incorrect is only necessary when “it interferes with intelligibility.” In view of this, researchers have emphasised the importance of prioritising English phonemic contrasts of high communicative value. These sound contrasts, if mispronounced, result in intelligibility failures. Therefore, it is not enough to identify pronunciation errors only. These sound contrasts should be prioritised for teaching and learning purposes (Levis, 2016:429). Brown (1988:593) conducted an investigation into this issue using the principle of functional load (FL). The FL approach towards phonemic contrasts in English was reconfirmed by Brown (1995), Gilner and Morales (2010) and Munro and Derwing (2006). Brown (1995:169) mentions that it is not enough to consider sounds as phonemic merely because of minimal pair contrasts, where two words differ from each other in one sound only. The minimal pair analysis should be supplemented by

further criteria to establish the communicative value or the FL of these minimal pairs. Gilner and Morales (2010:136) hold the same opinion and define the term functional load as “a means of quantifying the relative amount of work elements from a linguistic class do in the language.” The principle of FL, as stated by Brown (1988:594), is to measure the number of minimal pairs a certain phonemic contrast distinguishes. King (1967:831) defines functional load as “a measure of the work which two phonemes (or a distinctive feature) do in keeping utterances apart”. To establish the FL of English phonemic contrasts, Brown (1998) admitted that most of his discussion benefited from the works of other researchers. However, he emphasised that previous works did not attempt to link functional load to the teaching of pronunciation (ibid:596). In this respect Brown (1988:569) wrote that:

In my opinion, it has been an oversight that the concept of functional load has not been applied to the area of language teaching. In this article, I therefore wish to explore certain considerations that have a bearing on the usefulness of the concept to the teaching of pronunciation. This discussion owes much to the ideas of Avram (1964).

Following Brown’s (1988) stance towards linking functional load to the teaching of pronunciation, I suggest that intelligibility research will not be complete if functional load principle is not included in pronunciation studies based on intelligibility. In his attempts to learn the sound system of English, the learner will inevitably make pronunciation errors. The question here is how to determine the relative importance of such errors for a pronunciation classroom based on intelligibility. To the best of my knowledge, the importance of such errors was mostly based on frequency counts (see section 3.6.1). In this study, the relative importance of pronunciation errors will be based on Brown’s (1988) principle of functional load.

In his article, Brown (1988: 597–601) used several criteria to establish the FL of English segmental phonemic contrasts. These criteria include the cumulative frequency of minimal pairs, number of minimal pairs, probability of occurrence, occurrence in native accents, acoustic and phonetic similarity and structural distribution of phonemes. They are explained briefly below.

1. The cumulative frequency of minimal pair

The cumulative frequency of a minimal pair is calculated by adding together the individual frequencies of each phoneme of a minimal pair. For example, the cumulative frequency of the pair /e, æ/ (11.05%) is calculated by adding the individual frequency of 7.16% for /e/ and 3.89% for /æ/. Therefore, a pair with high cumulative frequency is more important to communication than a pair with lesser frequency. This assumes that there is an equal chance of mispronouncing either pair. But one of the pairs might be more easily learnt (more easily pronounced, positive transfer from L1).

2. Probability of occurrence

This criterion explains that one member of a conflated pair occurs more frequently than the other member. For example, the pair /i:, ɪ/ has a high cumulative frequency of 25.57% . However, the basic figures are 21.02% for /ɪ/ and 4.55% for /i:/. This means that if a learner confuses the pronunciation of the pair, the mispronounced sound is more likely to be the /ɪ/ sound. The probability of occurrence of a member of a pair is arrived at by dividing its individual frequency by the cumulative frequency for the pair.

3. Occurrence and stigmatisation in native accents

Certain conflated pairs are found in some native English accents. Such confluations are stigmatised, with no effect on understanding. For example, the confusion between /u, u: / is widespread in Scotland.

4. Acoustic and phonetic similarity

Acoustics refers to the physical properties of speech sounds when transmitted in the air from a sender to a receiver (Ladefoged, 2005). Some confused pairs are very similar in their acoustic features. Therefore, it is difficult to identify which member of the pair is recognised in speech. In contrast, some conflated pairs are different in their acoustic features. Thus, it is easy to recognise them, even in bad transmission conditions. The same explanation applies in relation to the phonetic similarity of some confused pairs.

5. Abundance of minimal pairs

A minimal pair that distinguishes many words is prioritised over other pairs for which only a few words are available. For example, few words could be listed for the pair / u, ʊ : / such as: pool, pull, hood and suit. Thus, a misunderstanding is unlikely for such sounds. They are relatively unimportant. Brown (1988:604) presents a list of phonemes arranged hierarchically in terms of importance. This list starts with the most important confluences in (10) to the least in (1). Table 3.4 below summarises this information.

Vowels		Consonants	
10	/e, æ/ /æ, ʌ/ /æ, ɒ/ /ʌ, ɒ/ /ɔɪ, əʊ/	10	/p, b/ /p, f/ /m, n/ /n, l/ /l, r/
9	/e, ɪ/ /e, eɪ/ /aɪ, aɪ/ /ɔɪ, əʊ/	9	/f, h/ /t, d/ /k, g/
8	/iɪ, ɪ/	8	/w, v/ /s, z/
7	—	7	/b, v/ /f, v/ /ð, z/ /s, ʃ/
6	/ɔɪ, ɜɪ/ /ɒ, əʊ/	6	/v, ð/ /s, ʒ/
5	/aɪ, ʌ/ /ɔɪ, ɒ/ /ɜɪ, ʌ/	5	/θ, ð/ /θ, s/ /ð, d/ /z, dʒ/ /n, ŋ/
4	/e, eə/ /æ, aɪ/ /aɪ, ɒ/ /ɔɪ, ʊ/ /ɜɪ, e/	4	/θ, t/
3	/iɪ, ɪə/ /aɪ, aʊ/ /aɪ, ʊ/	3	/tʃ, dʒ/
2	/ɪə, eə/	2	/tʃ, ʃ/ /ʃ, ʒ/ /j, ʒ/
1	/ɔɪ, ɔɪ/ /aɪ, ʊə/	1	/f, θ/ /dʒ, j/

Table 3. 4. Rank ordering of RP phonemes

(Brown, 1988:604)

The present study investigates Iraqi EFL learners' accented English within an intelligibility approach based on Gimson's (2001) MGI. To establish the communicative value of the phonemic contrasts found in the speech of Iraqi EFL learners, the study also uses Brown's (1988) functional load. Following Hellmuth (2014), an intelligibility approach to the investigation of foreign accented English should focus on the most distinctive features of the two English varieties of RP and GA and their importance to communication. Based on intelligibility and the functional load of phonemic contrasts, the present researcher believes that the pronunciation approach used in this study is more valid in the global context of English than an approach based on perfection and limited to one native English accent.

3.7.4. Communication strategies (CSs)

The above sections have shown that pronunciation features in intelligibility research are selected and analysed based on certain language learning principles like CA and functional load. It has also been revealed that the term interlanguage can be interpreted in different ways depending on the purpose of research. In this section, the term communication strategies (CSs) is presented to emphasise that the use of CSs is linked to pronunciation problems.

According to Tarone (1981:288), CS refers to the strategy which non-native English speakers employ to bridge the gap between their linguistic knowledge of the foreign language and the message they intend to deliver. Faerch and Kasper (1983:36) define CS as "potentially conscious plans for solving what to an individual presents itself as a problem in reaching a particular communicative aim." Furthermore, Canale (1983:10) defines CSs as verbal and non-verbal actions which the speaker makes use of to solve a communicative problem due to his linguistic incompetency. The above definitions show that the term CSs can be interpreted from two perspectives: the interactional and the psycholinguistic. In this respect, Somsai and Intarapraser (2011:85) state that the interactional perspective regards CSs as elements of discourse. In this sense, both the interlocutors in the interaction are engaged in meaning negotiations and repair strategies to solve a miscommunication. In contrasts, the psycholinguistic perspective considers CSs as mental plans which the individual learner uses to overcome his failure in oral communication. In the present study, I am investigating CSs from the psycholinguistic perspective. This means that my participants are not engaged in face-to-face interactions, but they are requested to speak of a topic from a suggested list of topics or

from their own choosing. Whether interactional or psycholinguistic, CSs are usually categorised into two types: achievement or compensatory strategies and reduction or avoidance strategies (Kongsom 2009:24). Kongsom (ibid) maintains that the former strategies refer to the different plans used by non-native English speakers to reach their goals, whereas the latter simply means avoiding solving a problem.

Based on my examination of the studies dealing with the use of communication strategies due to pronunciation problems, I could identify only two studies: Jenkins' (2000) and Kaur's (2009). Jenkins (2000) studies non-native interaction in English in the Expanding English Circles to establish a common core for international phonological intelligibility among non-native English speakers from different first language backgrounds. The materials used for her study were recorded interactions among advanced EFL learners of English. These materials were based on various information gap tasks. In these interactions, Jenkins (2000) emphasised that the interlocutors used various meaning negotiation strategies to solve miscommunications caused by pronunciation problems. She found out that these interlocutors modified their pronunciation to achieve success in communication. Jenkins (2000) emphasised that non-native English speakers converged to one another's pronunciation when miscommunication occurred. This emphasis was not done by some researchers who provided contradictory evidence revealing that non-native English speakers frequently diverged from one another due to the difficulty of adjusting their old articulatory habit (Levis, 2005:371).

A similar study was conducted by Kaur (2009). Kaur conducted a study to locate instances of miscommunication due to pronunciation features in face- to-face interactions in English among Malaysian speakers. The researcher tried to identify the types of strategies used by the speakers to avoid these miscommunications. Twenty-three hours of interaction in English were used. The researcher adopted Jenkins' (2000) methodology to identify the miscommunications and the strategies. Four information gap tasks were used to collect the data. The findings of the study identified some phonological features important for communication. These findings supported the findings arrived at by Jenkins' (2000). Also, the study revealed several communication strategies used by the interlocutors such as lexical anticipation, phonological anticipation, spelling and mime.

The above two studies share the common finding that communication strategies are used to solve problems related to pronunciation. In these interactions, the use of communication

strategies centres around the clarification of a previously mispronounced word. One of the benefits of using the information gap tasks as data collection tools is to relate a miscommunication to its directly related cause. In such tasks, the speaker is made aware of his pronunciation error by receiving a signal of misunderstanding from the listener. The speaker then attempts to find ways to resolve that error successfully so that communication still goes on. In this respect, one may raise the question as how to ensure that the problem the listener faces is related to the speaker's mispronunciation and not something else. This issue will be explained in detail in section 5.4.2.

Except for the above two studies, several studies were conducted on CSs based on factors other than pronunciation. For example, Yanny's (2006) study aimed to identify the effect of the speaking task used on the types of CSs employed by Indonesian learners of English. Six participants were used in the study. They were recruited from two schools: an intermediate and a high school. To identify the CS used, the participants were engaged in two speaking tasks. The first task required them to speak for three minutes, and the second task required them to engage in face to face interaction. The researcher found out that the types of strategies used were different in both groups and that the task effect had a great influence on the strategy chosen.

Skold (2008) investigated students' attitudes towards speaking English inside the classroom and the effect of their attitudes on the types of CS used. Fifty-one intermediate students participated in the study. The researcher collected three types of data: actual speaking data gathered inside the classroom, data obtained from a questionnaire and data collected from an interview with two teachers. The overall findings of the study showed that the amount of spoken English used was affected by the task chosen, teachers' views on the importance of the speaking activity, the planning of the lesson and talking in front of the class. In the Iraq EFL context, a study on CSs was carried out by Krebt (2010). The researcher aimed to find out the similarities and differences between the CS used by teachers and students in first year intermediate schools in Iraq. Two data collection techniques were employed: a questionnaire and an observation. The findings showed significant differences in the use of oral communication strategies.

The investigation of CS in the present study follows Kaur's (2009) study. The focus is on the type of strategy used when the main motive is to overcome pronunciation difficulty. The study,

however, differs from Kaur's (2009) in that no natural or face-to-face interactions are employed. Instead, the Iraqi EFL learners were met one at a time and asked to talk about a topic from a suggested list of topics in front of them (see section 4.5.2 on the speaking task and its procedures). In addition to the types of CSs used in Kaur's (2009) study, the present study also makes use of Tarone's (1977) classification of CSs. The following table summarises these strategies.

	Name of Strategy	Description
Paraphrase	Approximation	The use of a single lexical item from the target language which the learner knows is not correct, but it shares enough semantic features in common with the desired item to satisfy the speaker.
	Circumlocution	The learner describes the characteristics or elements of the object of action instead of using the appropriate target item or structure
	Word coinage	The learner makes up a new word to communicate a desired concept
Conscious Transfer	Literal translation	The learner translates word for word from the native language
	Language switch	The learner uses the native language form without bothering to translate
	Appeal for assistance	The learner asks for the correct form
	Mime	The learner uses non-verbal strategies instead of words
Avoidance	topic avoidance	The learner simply tries not to talk about a concept for which the items or structures are not known
	Message abandonment	The learner begins to talk about a concept, but he is unable to continue and stops

Table 3. 5. Tarone's communication strategies (1977, cited in Krebt, 2010: 38)

3.8. The Segmental Phonemes of Iraqi Arabic and English

The sound system of Iraqi Arabic (IA) and English will be contrasted to identify points of similarities and differences. The sound system of IA is mainly based on the late Al-Hamash (1969), a prominent Iraqi scholar in the field of phonetics, whereas the sound system of English is based on Gimson's (2001) MGI. Although other references are used, the focus is on the above two references. This comparison is conducted for several reasons. First, the comparison is considered the basis on which the data for this research are selected and analysed. For example, the reading passage in the quantitative aspect of the study is chosen because it contains all the distinctive phonemes of English. This ensures that all phonemes under scrutiny will be investigated carefully. The comparison helps to identify which phonemes in the two contrasted sound systems are identical, partially similar and different. This identification is very important for data analysis in the quantitative aspect of the study. In this study, the segmental aspect of FA is investigated according to the three levels of difficulty in speech production suggested by the moderate version of CA and Flege's (1995) Speech Learning Model. Third, the comparison is used to suggest potential pronunciation problems as well as determining the communicative value of phonemic contrasts according to Brown's (1988) functional load principle. For this purpose, the presentation of these phonemes will be descriptive in nature.

3.8.1. Iraqi Arabic and English consonants

Consonants refer to sounds which are produced with partial or complete closure of the air stream. They can be classified according to three criteria: place of articulation, manner of articulation and voicing (Gimson,2001:149)). For smooth comparison, consonants are grouped into obstruent (stops, fricatives and affricates), nasal, lateral and approximant and flap.

1. Obstruent Consonants

The term obstruent refers to speech sounds which are produced with a constriction causing noise as in plosives, fricatives and affricates (ibid:34). As far as plosives are concerned, these consonants are produced when the air is blocked in the mouth for a short time then it is released with explosion (Yule,1985:39). In MGI, there are six stop consonants. They are either voiced

/b, d, g, / or voiceless /p, t, k/. They occur in all word positions: initial, medial and final. In IA, stops are eight in number. They are / b, t, d, t, k, g, q and? /. These sounds are either voiced or voiceless (Al-Hamash, 1969).

A close look at the stops in both MGI and IA reveals areas of differences and similarities. There is no counterpart for the MGI / p / in IA. This means that Iraqi EFL speakers will face difficulty in producing and recognising this phoneme. They tend to substitute the sound /b/ for /p/. However, Rahim (1980: 228) claims that the /p/ phoneme is produced by Baghdadi people in some loan words like parda ('curtain'). This rare occurrence of /p/ does not lessen the difficulty in producing this phoneme (Nasr,1963:19). Another phonetic feature which can cause pronunciation difficulties for Iraqi EFL learners is the presence of aspiration, a short puff of air, in the production of voiceless stops /p, t, k/. This aspiration feature is differently distributed in both MGI and IA. In MGI, initial voiceless stops tend to be aspirated, whereas final and medial voiceless stops are unaspirated unless they are emphatic. In IA, all voiceless stops tend to be aspirated even in non-emphatic speech (Al-Hamash,1969:32). Commenting on aspiration, Gimson (2001:310) states that aspirated and unaspirated voiceless plosives can be distinguished by voicing alone in words like pie and buy. The second permissible modification suggested by Gimson (2001) is related to the point of articulation in producing /t/ and /d/. In IA, these two stops are described as dental by Al -Hamash (1969) and alveolar by Rahim (1980:234). Regarding the points of articulation for /t/ and /d/ in English, Gimson (2001:311) suggests that pronouncing these two consonants as 'dentals' rather than 'alveolar' will not affect their intelligibility.

As far as affricates are concerned, they are defined as a sequence of a stop followed by a homorganic fricative (Ladefoged,2005:63). In MGI, there are two affricates phonemes /tʃ and dʒ/. IA has similar affricates to MGI except for a difference in place of articulation. In IA, /tʃ/ is a voiceless, palato-alveolar and affricates phoneme, whereas /dʒ/ is a voiced palate-alveolar and affricates phoneme. In contrast, MGI /tʃ/ is a voiceless, post-alveolar and affricates phoneme, whereas /dʒ/ is a voiced post-alveolar and affricate phoneme. As stated by Wallace (2004:10), the transition from the /t/ element to the /ʃ/ is very rapid, a feature which renders it as a single phoneme.

With regards to fricative sounds, they are produced when the air passes through a narrow passage and causes friction. In MGI, there are nine fricatives /f, v, θ, ð, s, z, ʃ, ʒ and h/. They all occur in all word positions except for / ʒ /, which does not occur initially and / h /, which does not occur finally (Ladefoged, 2005:62). Gimson (2001) mentions that all English fricative phonemes must be retained. Although IA has more fricatives than MGI, there are still certain phonemes which do not have counterparts in IA, namely /v, ʒ/. Iraqi EFL speakers are expected to confuse these two sounds. The voiced labiodental fricative /v/ is often replaced by the voiceless labiodental fricative /f/ in words like seven and twelve. In some small cases, Al-Hamash (1969:30) believes that the two fricatives can occur as allophones in complementary distributions as in huvdat ('she memorised') where the /f/ becomes /v/. Similarly, the /ʃ/ sound can be produced as /ʒ/ in a word like masguul ('busy'), where it is also in complementary distribution (see Ahmed, 2000).

2.Nasals

A nasal is a speech sound produced when the soft palate is lowered so that the air can escape through the nose. There are three nasal phonemes in MGI /m, n and ŋ/. The phonemes / m and n/ occur in all positions, whereas /ŋ/ occurs words medially and finally. The phoneme /m/ is a voiced bilabial nasal, /n/ is a voiced alveolar nasal and /ŋ/ is a voiced velar nasal. In IA, there are two nasals: the voiced bilabial nasal / m/ and the voiced dental nasal / n /. They occur in all positions as in meez ('table') and nam ('slept'). The /ŋ/ sound does not have a counterpart in IA. Iraqi EFL learners may confuse this sound with /n/ and /ng/ (Al-Hamash, 1969: 30; Ahmed, 2000). In commenting on the /ŋ/ phoneme, Gimson (2001:312) states that the /ŋ/ can lose its phonemic status. Thus, it can be modified into /ng/ without causing intelligibility failure.

One important phonetic realisation of nasal consonants is their syllabicity feature. These consonants acquire vowel like features which make them syllabics. Syllabic consonants refer to phonetic environments where consonants can occupy the positions of vowels to form syllables by themselves (Abercrombie, 1967:78). For example, the word button has no vowel sound intervening between the /t/ and the /n/ sound, as pronounced by native English speakers. However, the /n/ sound acquires, in this position, some vowel like features which make it stand as a syllable by itself. The syllabic consonants are symbolised by the consonant with a vertical mark under it. In English, only the liquids sounds /l and r/ and the nasals /m, n, ŋ/ can be

syllabic. These syllabic sounds may arise because they occur with another consonant whose place of articulation is close to them i.e., they are homorganic (Catford, 1977:210). Or, they may be the result of syllabic syncope, where a vowel is lost and transference of syllabicity to a consonant occurs (Bell, 1978:167–8). Moreover, some consonants are, by nature, of considerable length which may cause them to be prominent enough to make them syllabic. These characteristics can help in providing a distinction between syllabic and non-syllabic consonants. The final feature is that these syllabic consonants are produced with a single breath of air pulse. This means that the articulators should restrict themselves to the position utilised to produce a syllabic consonant, without any movement to any other position or making any modification which may result in vowel articulation (Mahud, 1998). For example, in the production of syllabic /l/ and /n/ in the words muddle and button the articulators stick to their position. The tip of the tongue makes contact with the alveolar ridge and does not move until after the completion of /l/ and /n/ (Roach, 2000:67). Commenting on the use of syllabic consonants, Gimson (2001:312) states that “[a]lthough the use of syllabic /n,l/ is typical of RP, intelligibility does not suffer if /ə/ is inserted even after an alveolar consonant.”

3. Approximants

Approximants are produced when the articulators approach each other but they do not touch each other. In MGI, there are three approximants /r, w, j/. These share the possibility of appearing in similar position in words. They become fully devoiced and show considerable friction when preceded by voiceless stops (Ladefoged, 2005:64). In IA, /j/ and /w/ are called semi vowels rather than approximant. They are voiced and occur in all positions (Al-Hamash, 1969; Ahmed, 2000).

4. Lateral

As far as the lateral /l/ is concerned, this consonant phoneme has two allophonic variants: light /l/ and dark /l/. These phonetic variants refer to the same phoneme and are in complementary distribution. In MGI, Gimson (2001) suggests that the light /l/ can be used instead of a dark /l/ without affecting intelligibility. In IA, the lateral /l/ is described as dental rather than alveolar in MGI. In English, the lateral /l/ can also be syllabic. Syllabic /l/ is considered the most noticeable one among the English syllabic consonants. Being syllabic or not depends highly on the nature of its neighbouring consonants. If the preceding consonant is alveolar, as in little

or middle, the articulation movement from one to another is easy. As with other syllabic consonants, the loss of syllabicity in the production of /l/ does not harm intelligibility (Gimson, 2001).

5. IA Flap /r/

A flap is defined as an extra short stop made by a quick tap of mobile articulator such as the tongue against an opposing surface (Wallace,2004:12). There is only one flap consonant in IA which is the /r/. Its MGI counterpart is the approximant /r/. IA /r/ is described as a voiced dental flap consonant. In IA, when it occurs next to vowels, it retracts them hence it is regarded by some researchers as pharyngealised (Al-Ani, 1970:33 & Al-Hamash, 1969:23).

There are many types of the so-called /r/ sound in different languages. Although, the differences in phonetic realisations are not distinctive, they may cause mispronunciation which may then influence the ease of intelligibility. A variety of speech sounds are represented by the letter r. They are called trills or vibrant where the consonant produced either by the tip of the tongue or by the uvula. The uvular rolled r is pronounced by a series of taps made by the uvula against the back part of the tongue during vibration (Malmberg,1963:46-7). Syllabic /r/ can occur when more than one consonant preceding an unstressed syllable as in history and wonderer and when a single consonant preceding the /r/ as in buttering, flattery, camera and emperor (Roach, 2009:70).

Table (3.6) summarises the similarities and differences between the consonant phonemes of English and Iraqi Arabic. The comparison is based mainly on the works done by Al-Hamash (1969) and Gimson (2001). In the table below, the consonants are grouped into three categories: identical, partially similar and different.

Identical phonemes	b, t, d, k, g, f, s, z, θ, ð, ʃ, h, m, n, j, l
Partially similar phonemes	ʒ, dʒ, w, r
Different phonemes	p, v, ʒ, ŋ

Table 3. 6. Comparing consonants in MGI and IA

3.8.2. Iraqi Arabic and English vowels

Gimson (2001:309) states that “[t]he English vowel system is one of the less common and more complex types. It is, therefore, completely predictable that most foreign learners will have trouble attaining the vowel system of any variety of English, including RP.” Vowels are defined both phonetically and phonemically. Phonetically speaking, vowels are produced when the air leaves the mouth without any obstruction and the vocal cords vibrate. Phonologically speaking, vowels occupy the centre of a syllable which may be preceded and or followed by consonants. Vowels can also be described acoustically in terms of their formants. These formants are formed by the modifications which happen to the air when it passes through the oral cavity and are described as formants 1 and formants 2, referring to back and front positions respectively (Ladefoged, 2005). In terms of phonetic descriptions, vowels are classified according to four criteria:

1. Tongue height: close, half close, half open and open.
2. Part of the tongue raised: front, centre or back
3. Shape of the lips: rounded or unrounded
4. Length of vowels: long or short

It is often claimed by researchers that EFL learners’ poor mastery of English vowels is the main reason for difficulty in speech production and perception (Al-Abdely and Yap, 2016). According to MGI, vowel phonemes can be grouped into twelve monophthongs and eight diphthongs (Roach, 2009). Triphthongs are sometimes added as a third category of vowel classification. However, they are not included in the English sound system because they are often analysed as a diphthong plus /ə/ (Roach, 2009). Commenting on the vowel system in English, Gimson (2001:309) states that “[t]he vowel system may be simplified in both phonemic and phonetic respects, while still keeping an acceptable level of intelligibility.” The following section presents a contrastive account of MGI and IA monophthongs and diphthongs.

3.8.2.1. Iraqi Arabic and English monophthongs

A monophthong (or a pure vowel) is a sound during the production of which the speech organs remain static for a considerable period (Roach, 2009:21). The following is a list of the major contrasts between the vowel systems in MGI and IA.

1. /ɪ and i:/

Long vowels in Iraqi Arabic are represented by writing the same symbol twice. In MGI, the monophthong /ɪ/ is a front, close, short and unrounded English vowel, whereas /i:/ is a front, close, long and unrounded vowel. In IA, /i/ is front, high, short and unrounded vowel, whereas /ii/ is a long, high, front and unrounded vowel (Long vowels in Iraqi Arabic are represented by writing the same symbol twice). Although the two vowel phonemes are similar in MGI and IA, they exhibit some allophonic variations. For example, the IA vowel phoneme /i/ seems to be relatively lower than MGI /ɪ/ (Al-Hamash, 1969:65). The same allophonic variation can be observed with MGI /i:/. Aziz (1976:254) mentions that Iraqi EFL learners would transfer the quantity of IA /i:/ to its MGI equivalent vowel phoneme.

2. /e and ɜ:/

The English /e/ vowel is a short, front, unrounded and between cardinal vowel [ɛ] and [e], whereas /ɜ:/ is a long, central, unrounded vowel. Although the above English vowels have no counterparts in Modern Standard Arabic, Al-Hamash (1969:56) states that they have the Iraqi Arabic /ee/ as their nearest equivalent. Also, Al-Wahab (1980:41) mentions that IA speakers develop the vowel /ee/ as a reduction of Standard Arabic diphthongs /ay/. This vowel is partially similar to the /e:/ sound suggested by Gimson (2001) as a simplification of the English diphthong /eɪ/. As a result, it is expected that Iraqi EFL speakers face difficulty in producing these MGI vowels. According to Tiffen (1976:29), the MGI vowel /ɜ:/ is considered the most difficult English vowel sound. It could be confused with /e, ɪr and eə/.

3. /æ, and a:/

The MGI /æ/ is a front, open, short and unrounded vowel, whereas /a:/ is a long, back, open and unrounded vowel. Although these two English vowel phonemes have their equivalents in IA, Al-Hamash (1969:56) states that Iraqi EFL speakers may find difficulty in differentiating

between /æ/ and /a:/ because IA /aa/ and /a/ are closer to MGI /a:/ than /æ/. Furthermore, when /a:/ occurs in words spelled with (r), Iraqi EFL speakers pronounce this (r) as in park and car (Aziz, 1976:255). Regarding the pronunciation of the /r/ sound, Gimson (2001) considers that as a possible simplification in vowel production. Thus, the preservation of postvocalic /r/ is also applied to long vowels /a:/ and /ɜ:/ . These vowels could be produced with / r / sound as in car / ka:r / and bird /bɜ:rd/.

4. /ɒ and ɔ:/

The /ɒ/ is a back, open, short and rounded vowel, whereas / ɔ:/ is a back, mid open long and rounded vowel. These vowels have no exact equivalents in IA. The nearest vowel sounds are the IA /o and oo/ (Al-Hamash, 1969:80). However, these IA vowels are not one of the main vowels sounds since they occur in a few words and mainly at the ends of these words “with a higher tongue position and more lip rounding than the English vowel” (Tiffen,1976:25). Thus, Iraqi EFL speakers tend to pronounce doctor and gone as /dʌktɔr/ and /gʌn/ (Aziz,1976:55).

5. /ʊ and u:/

The /ʊ/ is a back, close, short and unrounded vowel, whereas the /u:/ is a close, long, back and rounded vowel. These two vowels have their counterparts in IA (Al-Hamash, 1969; Ahmed, 2000).

6. /ə/ and /ʌ/

These two vowels do not have their equivalents in IA. Al-Hamash (1969:56) states that Iraqi speakers are misled by the spelling in the sense that they give full value to the unaccented vowel in words like woman, famous, oblige and suppose. Al-Hamash (ibid) adds that the vowel /a/ is the closest equivalent to /ə/. However, the two are different in distribution, the first occurs in unaccented positions, whereas the second is conditioned to the adjoining consonant. Although Gimson (2001) suggests the vowel /ə/ as a simplification for the / ʌ /, the simplified vowel is also not found in IA.

Table (3.7) summarises the similarities and differences between the monophthong phonemes of English and Iraqi Arabic. The comparison is based mainly on the works done by Al-Hamash (1969) and Gimson (2001). In the table below, the monophthongs or pure vowels are grouped into three categories: identical, partially similar and different.

Identical phonemes	i:, ɪ, u:,
Partially similar phonemes	e, a:, æ, ɔ:, ɒ
Different phonemes	ɜ:, ə, ʌ

Table 3. 7. Comparing monophthongs in MGI and IA

According to Flege (1995), learning the English vowel sounds can take three routes; different phonemes are thought to be easy to learn, identical phonemes are thought to be the easiest to learn and partially similar phonemes are thought to be the most difficult to learn.

3.8.2.2. Iraqi Arabic and English diphthongs

1. /eɪ / closing diphthong

In the production of this diphthong, the tongue glides from a mid-open position in /e/ to the close position of /ɪ/. This closing diphthong has its counterpart in IA. It differs very little from MSA /ay/ Al-Hamash (1969:55). However, Aziz (1974:68) states that some Iraqi speakers tend to replace this /ay/ diphthong with the long pure IA vowel /ee/ in words like great and fail. This tendency of replacing the sound may be generalised by Iraqi speakers to a wide number of English words.

2. /aɪ / closing diphthong

In the production of the closing diphthong /aɪ/, the tongue moves from an open /a/ position to the close /ɪ/. The nearest equivalent to this closing diphthong is the IA /aay/. According to Al-Hamash, (1969:57) there are two main differences between the two vowels. First, the first vowel element in IA /aay/ is longer than the first vowel in MGI /aɪ/. Second, the IA /aay/ does not occur in a consonant plus vowel context like the MGI /aɪ/. In this context, Iraqi speakers

tend to insert a vowel in words like fight pronounced like /faayit/ and night pronounced like /naayit/ (Ahmed, 2000).

3. /au/ closing diphthong

This English phoneme is like the diphthong /aw/ found in Modern Standard Arabic. However, there is an allophonic variation for the English diphthong /au/ in IA. Iraqi Arabic speakers usually use the diphthong /aaw/ instead (Ahmed, 2000). The initial vocalic element in MSA /aw/ is shorter than the MGI /au/, whereas the initial IA vowel in /aaw/ is longer than the initial vowel element in MGI /au/. It is then expected that Iraqi speakers tend to replace the first vowel in MGI /au/ with either too long or too short vowel (Al-Hamash, 1969).

4. /ɔɪ/ Closing diphthong

This /ɔɪ/ diphthong does not have its equivalent in MSA. Its nearest counterpart in IA is /ooy/. This diphthong is regarded as a sequence of long /oo/ plus a vowel similar to /ee/ (Al-Hamash, 1969:57). As stated by Tiffen (1976:30), the MGI /ɔɪ/ does not present much difficulty to Arab speakers. However, they sometimes insert a vowel in producing words like oil /ooyil/ and boil /booyil/.

5. /əʊ/ closing diphthong

This diphthong is somehow difficult for Iraqi speakers who tend to replace it with the pure vowel /ɔ:/ (Aziz, 1974:68). For example, instead of saying go and coat, Iraqi speakers may say /gɔ:/ and /kɔ:t/. This reflects a tendency for Iraqi speakers to make diphthongs as pure vowels (ibid).

6. /ɪə, eə and uə/ centring diphthongs

Gimson (2001:308) states that the three English centring diphthongs /ɪə eə uə/ can be simplified as vowel + r, by the retention of postvocalic r. This will result in producing /i:ə, eɪr and u:r/ respectively in words like peer / pi:r/ , pair / peɪr/ and poor / pu:r/ or / pɔ:r/. Iraq Arabic speakers usually replace these centring diphthongs by the pure vowels /i:/, /ɜ:/ and /u:/ respectively in words like dear, care and sure (Aziz, 1974:69).

Table (3.8) summarises the similarities and differences between the diphthong phonemes of English and Iraqi Arabic. The comparison is based mainly on the works done by Al-Hamash (1969) and Gimson (2001). In the table below, the diphthongs are grouped into three categories: identical, partially similar and different.

Identical phonemes	əʊ, eɪ
Partially similar phonemes	ɔɪ, aʊ ʊə,
Different phonemes	ɑɪ, eə, ɪə

Table 3. 8. Comparing diphthongs in MGI and IA

3.9. Speech Production and Perception Theories

Speech production and perception theories form one of the bases for data collection, analysis and the interpretation of findings. This section focusses on speech production and perception theories because the present study is concerned with investigating the intelligibility of Iraqi EFL learners' accented English at the production and perception levels. The aim of the section is to identify the major themes emerged from these theories and to show their relevance to the present study.

Theme 1. The static and dynamic view of speech production

The static view of speech production describes speech sounds as if the speech organs move in a linear and discrete manner. The organs of speech are described gliding from one point of articulation to the next in a static manner. This static view of speech production dominated the thinking in articulatory phonetics culminating in what Laver called "the postural view of speech production" (1970:56). According to this view, the articulation of speech is seen "as if it consisted of momentarily static postures of the speech organs, linked by glide from one posture to the next" (Abercrombie, 1965:121).

By contrast, the dynamic view describes speech as a dynamic process involving many coordinated articulatory processes than as a sequence of relatively static postures involving one or two of the articulatory organs. In this respect, Löfqvist (1997:405) states that “at any point in time, the vocal tract is an aggregate of different production units.” It is a configuration involving different speech organs, the glottis, the velum, the tongue, the lips and the jaw.

These two views of speech production, the dynamic and the static, result in the suggestion of two modes of description and representation, the linguistic mode and the dynamic mode. As Löfqvist (1997:405) points out “in the linguistic mode, the units of language are described without a temporal domain. For example, most phonological descriptions use a set of symbols that can be arranged in different ways to produce different messages.” The dynamic mode, in contrast, concentrates on describing the articulatory and acoustic properties of speech. Löfqvist (ibid) writes that in this mode “the focus is on the time varying properties of articulatory movements and/or the spectral characteristics of the speech signals.”

For the purpose of this study, the static mode with its linguistic mode of representation is adopted for the following reasons. First, this study is concerned with investigating intelligibility rather than perfection in the mastery of the sound system of English. This means that not all articulatory adjustments and their associated phonetic features are important for acceptable speech production especially for EFL learners. For example, Gimson (2001) asserts that the articulatory effect leading to the production of aspiration is not necessary in the production of the English voiceless plosive /p, t, k/. These phonemes can still be recognised despite the absence of aspiration. Second, the elicited speech data are devoid of any connected speech processes like the production of weak forms, elision and assimilation. This is done by selecting a reading passage for the speech production test. Third, the analysis of speech data in the quantitative and qualitative aspect of the study is mainly concerned with identifying the sound confluences made by Iraqi EFL learners. These phonemic contrasts will be assessed then compared to Brown’s (1988) list of segmental phonemes to establish their functional loads.

Theme 2. The production and perception of speech sounds vary in terms of difficulty

According to Flege’s (1995) Speech Learning Model, speech production and perception are affected by factors related to age and L1 transfer. Flege (1995) emphasises that learning English at an earlier age is essential because it is associated with gaining experience of the phonetic

properties of the target language. This language learning experience enables foreign language learners to establish phonetic categories for FL sounds in a specific phonological space (1995:233). Regarding L1 transfer, Flege (1995) mentions that the similarity between the phonological systems of the L1 and L2 may result in more difficulty in speech production and perception. This is because the difference between the acoustic signals of these similar sounds is too small to be distinguished by the learner. Thus, they are drawn to the same L1 phonetic category. By contrast, a new second language sound that has no counterpart in the L1 phonological system is easy to produce and perceive because it possesses prominent acoustic cues. This results in setting up a new phonetic category for the sound.

In a similar line, Best's (1995) Perceptual Assimilation Model (PAM) emphasises that similar gestural constellations between languages are difficult to produce and perceive accurately because the small allophonic differences are assimilated to the native language phonetic category. By contrast, different gestural constellations are easy to produce and perceive as the speaker sets up a new different gestural constellation. Thus, Best's (1995) PAM predicts that non-native phones will be perceived in three ways: similar phones will be assimilated to the native language, partially similar sounds will not be assimilated to any language, but rather left uncategorised and different phones will be assimilated into a new phonetic category. The above theme is related to the present study in two ways. First, data analysis is conducted based on three varying levels of difficulty in speech sound production: identical, partially similar and different. Second, the researcher makes sure that the speech data collected manifest these three difficulty levels.

Theme 3. Speech perception involves sound recognition and understanding

Speech perception is a process that involves a communicative act in which a listener derives meaning from a speaker. In this respect, Voss (1984:18) mentions that speech perception relies on three components "an acoustic component, a linguistic component and a content component. Deficiencies in the acoustic component, for example, under conditions of noise, can be compensated for by a good command of the language component." Albashir defines perception as "a process that involves a communicative act in which a listener derives meaning from a speaker" (2008:24).

Regarding intelligibility research, this concept of speech perception means two things. First, it means that intelligibility research can be restricted to the recognition of speech sounds only especially when decontextualised speech data are used. Second, it means that intelligibility research can be extended to include reference to understanding especially when contextualised discourses are used. In this study, I am using the second sense of the term speech perception in the investigation of the intelligibility of Iraqi EFL learners at the speech perception level. In support for this theme, I will review two speech perception theories. These theories show that perception can be at the sound level and beyond. They also show that perception can improve through language exposure and explicit instructions.

A. Perceptual Magnet Effect

Kuhl (1991) introduces his Perceptual Magnet Effect (PME) theory to emphasise that speech sounds contrasts are internally structured into prototypes of distinctive phonetic categories. These prototypes represent a constellation of distinctive sound features which listeners use to perceive speech sounds. Such prototypes which represent invariant phonetic cues in speech are developed from infant-hood and stored in the listener's long-term memory. When engaged in a communicative act, these prototypes are activated to enable the listener to perceive speech sounds successfully. These prototypes occupy a specific acoustic space. They behave like magnets pulling variant phonetic sounds in proximity towards them, whereas those sounds which are far from the acoustic space of the prototypes form different phonetic categories (Kuhl, 1991). The PME theory further suggests that "phonetic perception is altered as a function of exposure to language" (Kuhl & Iverson, 1995:122-123). This last point suggests that familiar accents are perceived better than unfamiliar accents. Listeners who have more exposure to language are able to decide whether the surrounding variants are allophones of the prototypes or distinct phonemes. Kuhl's (1991) PME is similar to the Acoustic Invariance Theory, which emphasises that invariant phonetic cues exist despite the variability of speech signals (Blumstein and Stevens, 1980). It is these invariant phonetic cues which listeners store and later activate in speech perception. It is noteworthy that the speech signals carry other information related to the speaker's identification, emotions, social and educational background. To account for these pieces of information, the Exemplar Theory is suggested.

B. Exemplar Theory

The Exemplar Theory (ET) is similar to the basic invariant prototypes described in the Perceptual Magnet Effect except that the exemplars are not confined to single sounds or phonemes. The exemplars represent a constellation of various linguistic experiences, which could be associated with particular words, people, accents and sounds, all stored for a considerable time in what is referred to as ‘exemplar clouds’ (Pierrehumbert, 2001:3). These clouds are activated during speech perception to identify different linguistic and non-linguistic information contained in speech. For example, the ET could be used to explain how people can identify the identity of a caller before the caller finishes his first full word. The Exemplar Theory emphasises that the more exposure to language a learner has, the stronger these exemplars or clouds will be. Thus, speech perception will be increased if the learner receives more exposure to the target language. As has already been mentioned, language exposure, in addition to linguistic experience, is one of the criteria for determining accent familiarity levels.

3.10. Exploring Gaps in Knowledge

The first gap that is detected in knowledge is between pronunciation studies conducted worldwide and those conducted in Iraq. Worldwide pronunciation studies, whether monocentric or pluricentric studies, have abandoned the requirement of an RP perfection goal on the part of non-native English speakers. Instead, intelligibility is proposed as a more practical and achievable performance target for non-native English speakers (Isaacs and Trofimovich, 2016:5). Thus, many studies have been conducted worldwide advocating intelligibility rather than perfection as the performance goal for non-native English speakers (Holland, 2000; Flemming, 1977; Kim, 2008; Jenkins, 2006a, 2009a, 2000; Derwing and Munro, 2009, 2005; Cavaleiro, 2015; Saito, 2007; Munyadamusta, 2005). Unfortunately, the shift of pronunciation research to intelligibility has not occurred in the Iraqi EFL classrooms and research practice. The only two published papers written on the topic in Iraq were unsuccessful in carrying out the investigation within an intelligibility construct (see section 2.6.1). To my knowledge, pronunciation studies conducted in Iraq up to the present time still adhere to the unattainable perfection requirement of a native English speaker with an RP accent (Rashid, 2011; Al Abdely and Yap, 2016; Al-Azzawi and Barany, 2015; Al Owaidi, 2017).

The second knowledge gap identified is related to Gimson's (2001) MGI, a modified version of RP (Cruttenden, 2014). Although the model is frequently mentioned by monocentric intelligibility researchers, it is not empirically tested for EFL learners, at least in Iraq. As far as I know, the only study which explicitly adopted the model was that of Munyandamusta (2005). That study investigated the intelligibility of Rwandan learners of English. When setting MGI, Gimson (2001:298) emphasised that EFL learners need to master the basic distinctive English phonemes as set by MGI. In Munyandamusta's (2005) study, there was no indication that the sounds correctly produced or those which impeded intelligibility were communicatively distinctive. The present study explicitly emphasises the communicative value of English segmental phonemes by using Brown's (1988) list of the functional loads of phonemic contrasts as a follow up analysis of the segmental phonemic contrasts made by the Iraqi EFL learners.

The third knowledge gap is related to the investigation of communication strategies. Kaur (2009) states that few studies have been conducted linking the use of communication strategies to pronunciation problems. This means that the focus is on the type of strategy an EFL learner uses when the main reason for its use is pronunciation problems. In the Iraq EFL context, the investigation of communication strategies has been based on lexical approaches mainly (Krebt, 2010). As far as I know, there has been no study that investigates Iraqi EFL accented English in relation to communication strategies.

The fourth knowledge gap is related to the factors investigated in this study, namely foreign accent and accent familiarity. On the one hand, the effect of a foreign accent has been investigated based on the difficulty level predicted by the Contrastive Analysis Hypothesis. In this study, the intelligibility of Iraqi EFL learners' speech production is investigated based on the difficulty levels set by Flege's (1995) Speech Learning Model and Best's (1995) Perceptual Assimilation Model. On the other hand, previous studies on the effect of accent familiarity on intelligibility have focused on finding overall significant differences in perceptive intelligibility scores. For instance, Browne (2016) mentions that the existing literature on accent familiarity only reveals that accent familiarity affects the overall pronunciation scores of non-native English speakers. Thus, Browne's (2016) study was conducted to ascertain whether accent familiarity affects intelligibility scores as well. By intelligibility, Browne (2016) means the production and recognition of English speech sounds, without reference to meaning. In the present study, intelligibility is defined in relation to understanding spoken English discourse in context as well.

3.11. Summary and Conclusion

This chapter reviewed the related literature on intelligibility in terms of its definition, pronunciation models, factors influencing intelligibility, methodology, findings, underlying language learning principles and speech production and perception theories. Each aspect of the related literature will be presented according to its themes and relevance to the present study.

In terms of defining intelligibility, two definitions were proposed. The first one defined intelligibility in relation to sound production and recognition, with no reference to meaning. The second defined intelligibility in relation to understanding. The inclusion of a meaning component in this definition was restricted to the understanding of the literal meaning of words and utterances only. It excluded all other types of figurative and pragmatic meanings. This was the reason why I used the term perception rather than recognition in this second sense of intelligibility. For the purpose of this study, these two definitions were adopted. This entailed restricting the former to the investigation of productive intelligibility, whereas the latter was restricted to the investigation of perceptive intelligibility.

The second theme which emerged from the literature review was related to the pronunciation model which could be used as a reference point for intelligibility research. In this respect, two pronunciation models were identified: Jenkins' (2000) Lingua Franca Core (LFC) and Gimson's (2001) Minimum General Intelligibility (MGI). The first model is not followed in this study because it is based on non-native to non-native varieties in English. The present study adopts Gimson's (2001) MGI. This model is chosen because it is based on intelligibility rather than perfection in mastering the pronunciation of English. In suggesting the model, Gimson (*ibid*:298) emphasises two features which are important for the use of English in its global context. First, the model is based on the selection of the most distinctive features of the two native English varieties of RP and GA. The second feature, emphasised by the model, is its emphasis on exposing the EFL learner to various native and non-native English accents. As confirmed by related studies (see section 3.6.2), familiarity with the speaker's accent positively affects listeners' understanding of utterances in that accent. Hence, the present study uses the above model to assess the productive and perceptive intelligibility of Iraqi EFL learners in relation to foreign accent and accent familiarity (see section 3.5 for further information on choosing this model).

Having defined intelligibility and its pronunciation model, the third theme revealed by the literature review was related to the factors which influenced the intelligibility of foreign accented English. In this respect, several factors were identified. For the purpose of this study, two factors were investigated: foreign accent and accent familiarity. The reason for choosing these two factors is that they are present at any speech interaction in English regardless of the definition a researcher adopts for intelligibility (Derwing, 2005). Also, I have chosen these two factors because I am interested in assessing the intelligibility of Iraqi EFL learners at the speech production and perception levels.

At the methodological level, several issues were recognised from the related literature. The first issue was related to the identification of the phonemes which were predicted to cause problems in speech production. In this regard, most reviewed pronunciation studies selected these phonemes according to the principles of CA. In this study, I adopted the moderate version of CA to select the phonemes which were predicted to be of varying difficulty levels to Iraqi EFL learners. According to the moderate version of CA and Flege's (1995) Speech Learning Model, three levels of difficulty were identified in speech production: identical phonemes are the easiest to produce, partially similar phonemes are the most difficult to produce and different phonemes are easy to produce.

The second methodological issue was deciding on the measurement tools used. In this respect, the literature review revealed that most researchers used two data measurement tools: word transcription (or dictation) tasks and rating scales. The data obtained from these two measurement tools were then subjected to a quantitative analysis which may be followed by a qualitative one for the sake of explanation, expanding or confirming the quantitative findings. In this study, I used a speech production intelligibility test using a word transcription task to measure the productive intelligibility of Iraqi EFL learners and a speech perception test using a five-point Likert scale to measure the perceptive intelligibility of Iraqi EFL learners. For triangulation purposes, I adopted a mixed method research approach. The quantitative aspect of the study is followed by a qualitative investigation using two themes from the literature review: functional load and communication strategies. The purpose is to confirm the quantitative findings and expand on the affecting factors by suggesting that FL learners can use various communication strategies to deliver their message successfully when facing pronunciation problems.

Regarding the findings of related studies, they can be grouped into those related to foreign accent and accent familiarity. The findings related to the effect of foreign accent on intelligibility were concerned with non-native English speakers' ability to produce English words and utterances in an intelligible manner. This production should not deviate too far from a pronunciation model resulting in having different or non-existing English words. In this respect, the findings varied depending on the context, ESL or EFL, the proficiency level of the learners, methodology used, and definition adopted. Being the focus of this study, the findings related to the effect of segmental phonemes on intelligibility can be grouped into two categories. The first category is concerned with establishing which aspect of segmental phonemes mostly affect intelligibility, vowels or consonants. Most reviewed studies pointed to the effect of vowel phonemes on intelligibility. The second category is concerned with identifying which vowel phonemes have the most effect on intelligibility. In this respect, two different findings were revealed. The first claimed that non-existing vowel phonemes in the two contrasted languages were the major cause of intelligibility failures. The second finding claimed that partially similar vowel phonemes in the two contrasted languages were the major cause of intelligibility failures.

The findings related to the effect of accent familiarity on intelligibility were contradictory in nature. Some studies confirmed this effect, whereas other studies rejected this effect. The studies which confirmed the facilitating effect of accent familiarity on intelligibility differed with respect to the identification of accent familiarity levels. Bent and Bradlow (2003) identified the effect of three levels of AF on intelligibility: matched, mismatched and unfamiliar. Browne (2016) added a fourth level based on years of residence in the target language. The assumption behind establishing these levels is to show that listeners' understanding of English speech depends on their accent familiarity levels with the speaker.

As far as theories of speech production and perception are concerned, most researchers believe that there is a one to one relationship between production and perception. This means that FL learners who can produce certain speech sounds are also able to recognise these sounds correctly. This belief was confirmed by research findings as well as theories related to speech production and perception. The main theme which emerged from these theories is that establishing phonetic categories for certain sounds at the perception level will facilitate their learning at the production level. Thus, some researchers prefer to limit their investigation to one aspect of speech intelligibility such as production only. Although acknowledging this

myself, I have chosen to investigate the intelligibility of Iraqi EFL learners' speech perception as well. This is because I believe that the correspondence between production and perception varies with reference to listeners' accent familiarity levels with the speaker. Following Bent and Bradlow (2003), the intelligibility of Iraqi EFL learners' speech perception is investigated in terms of three levels of accent familiarity: matched, mismatched and unfamiliar. The diagram below illustrates the analytical frame used in conducting and analysing the present research.

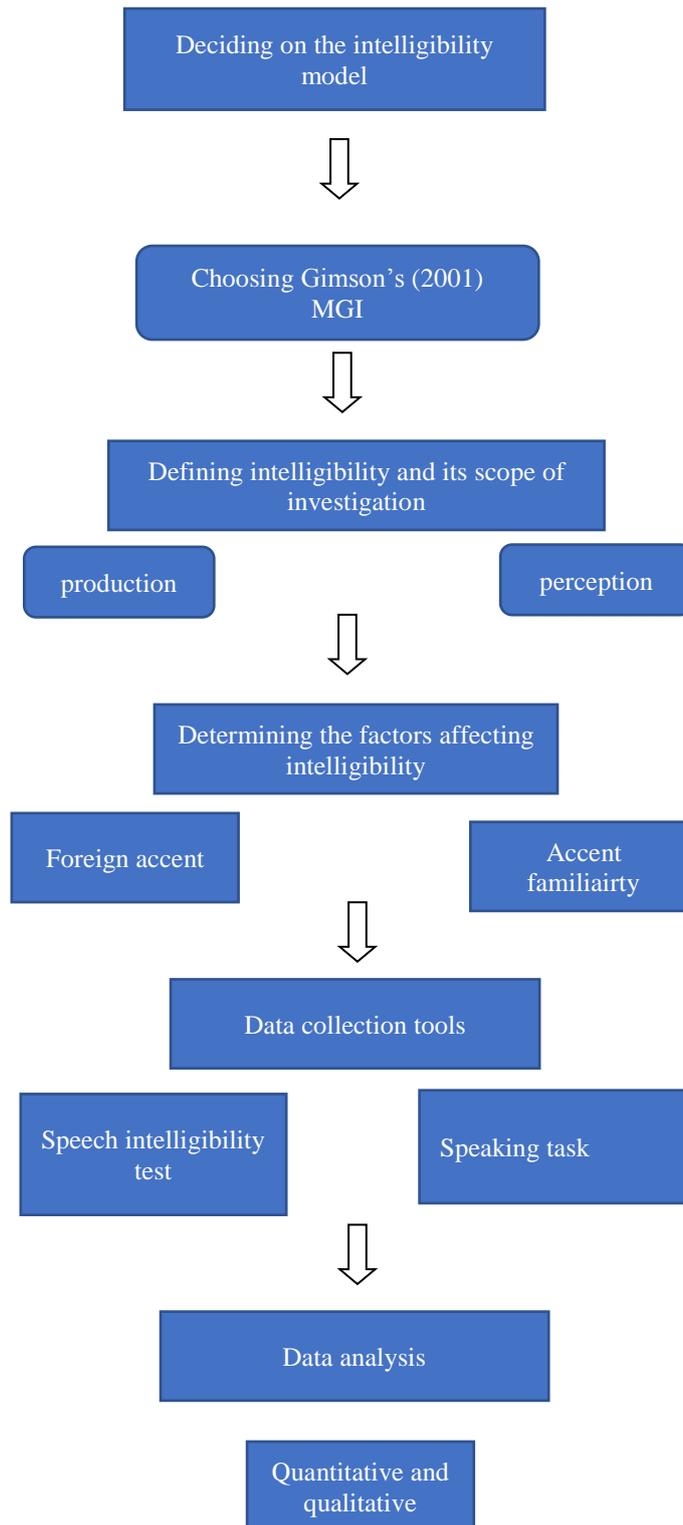


Figure 3. 2. The analytical frame of the research

CHAPTER FOUR: METHODOLOGY

4.1. Introduction

This chapter discusses the methodology used to investigate the productive and perceptive intelligibility of Iraqi EFL learners in relation to foreign accent and accent familiarity. The chapter starts by explaining the research philosophy in relation to applied social sciences, i.e. the researcher's epistemological stance will be presented. The data collection and analysis are introduced along with the justification for the types of speech data elicited, the tools used, and the analytical approach adopted. A lengthy section is devoted to the explanation of the speech intelligibility test and the speaking task in terms of materials, procedures and analyses. The pilot study is introduced and discussed showing how it relates to the refinement of the speech intelligibility test as well as the speaking task.

4.2. Research Questions

The research questions used in this investigation are as follows:

1. To what extent is Iraqi EFL learners' speech production intelligible to native English listeners? Does foreign accent cause statistically significant variations in productive intelligibility scores?
2. To what extent is English speech intelligible to Iraqi EFL learners? Does accent familiarity cause statistically significant variations in perceptive intelligibility scores?
3. Is there any relationship between the productive intelligibility and the perceptive intelligibility of Iraqi EFL learners?

4.3. Epistemology and Research Design

Undertaking scientific research implies a researcher's commitment to some philosophical assumptions or views of the world. These philosophical assumptions lead to the research philosophy adhered to by an investigator that guides the ways the data of social phenomena are gathered and analysed. In researching social sciences, there are two major research philosophies. The first one is referred to as positivism and the second is referred to as interpretivism (Punch, 2005). Positivism refers to statements which can be made about the world that are true and thus objective. Bryman (2008:13) defines it as "an epistemological

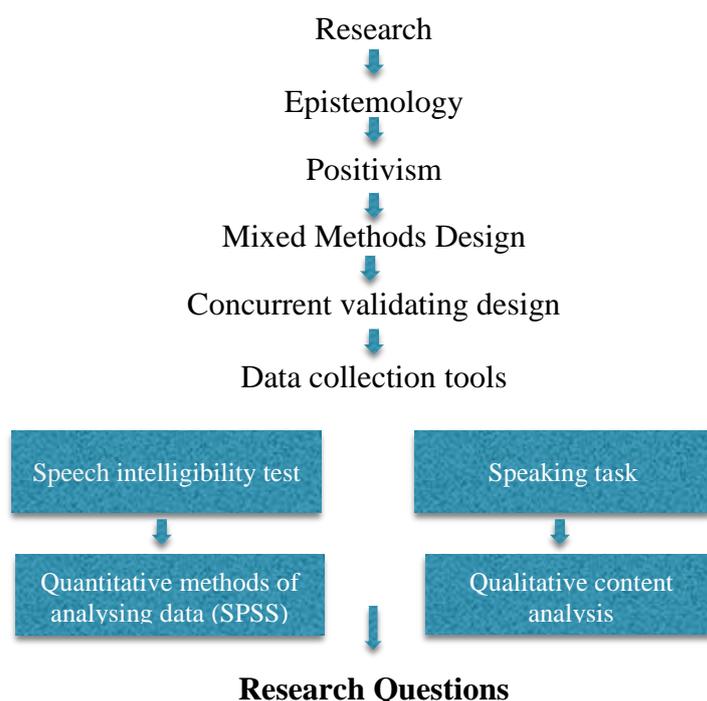
position that advocates the application of the methods of the natural sciences to the study of social reality and beyond.” In other words, it is an epistemological stance whereby data about a world phenomenon should be collected and analysed using the methods of the natural sciences. Positivism depicts a social phenomenon as an objective entity whose data are collected and analysed without human interference. This entails the investigated concepts being operationalised and the measurement being designed to specifically investigate these concepts (Cohen, 2007:17). Positivism is based on formulating and testing a theory; therefore, the research progresses through tentative hypotheses.

On the other hand, interpretivism reflects a subjective view of the world. It means that facts are relative to interpretations. Interpretivism “respects the differences between people and the objects of the natural sciences and therefore requires the social scientist to grasp the subjective meaning of social action” (Bryman, 2008:13). Our views and conceptions of a social phenomenon are bound by the context and the individual. This context bound view results in multiple interpretations and realities, whereby knowledge is arrived at by rich and thorough descriptions of the social phenomenon (Cohen, 2007:18).

This present researcher adopts a positivist epistemological position regarding data collection and analysis. Epistemology answers the question as to how it is possible to get knowledge from the world. It is a theory of knowledge, relating to how we acquire the knowledge from what exists in the world (Gratton and Jones, 2004:14). An epistemological position introduces a “view of and a justification of what can be considered as knowledge, what can be known and what criteria such knowledge must satisfy in order to be called knowledge rather than beliefs” (Cohen, 2007:7). The clear-cut distinction between interpretivism and positivism is criticised by some who call for a pragmatic position that involves a combination of different methods in the investigation of a social phenomenon (Johnson and Onwuegbuzie, 2004:14). In this regard, there are two levels of approaching research: epistemology, and methodology. At the level of epistemology, researchers can be either interpretivists or positivists, and I adopt a positivist stance in the present study. At the level of methodology, the epistemological position taken makes no difference to the research tools, and so the researcher can use both quantitative and qualitative methods. However, it makes a difference to the interpretations of results.

Based on what had been said above, the researcher chose a mixed methods research to investigate the productive and perceptive intelligibility of Iraqi EFL learners. The quantitative

aspect of the study aims at measuring the productive and perceptive intelligibility of Iraqi EFL learners and examine how intelligibility varies with respect to foreign accent and accent familiarity. The qualitative aspect aims to validate and expand the quantitative results using qualitative data. The above chosen method and the data collection tools used have been in line with Bell (2005:115) who recommended that “decisions have to be made about which methods are best for particular purposes and then data collecting instruments must be designed to do the job.” Figure 4.1 represents the epistemological position and the design of the present study.



1. To what extent is Iraqi EFL learners' speech production intelligible to native English listeners? Does foreign accent cause statistically significant variations in productive intelligibility scores?
2. To what extent is English speech intelligible to Iraqi EFL learners? Does accent familiarity cause statistically significant variations in perceptive intelligibility scores?
3. Is there any relationship between the productive intelligibility and the perceptive intelligibility of Iraqi EFL learners?

Figure 4. 1. Epistemological framework and research design

4.4. Mixed Methods Research: Rationale and Limitation

Creswell et al. (2003:212) state that a mixed methods research “involves the collection or analysis of both quantitative and/or qualitative data in a single study in which the data are collected concurrently or sequentially, are given a priority, and involve the integration of the data at one or more stages in the process of research.” Also, Dornyei (2007:24) mentions that a mixed method research “involves different combinations of qualitative and quantitative research either at the data collection or at the analysis levels. It is defined as some sort of combination of qualitative and quantitative methods within a single research project.”

The present study adopts a mixed methods research design in the investigation of the productive and perceptive intelligibility of Iraqi EFL learners with reference to foreign accent and accent familiarity. The rationale for combining various methodologies is mainly to validate and expand the quantitative findings with qualitative results. The call for mixed methods research encourages researchers to capture both the subjective and objective aspects of human behaviour. However, the emphasis on one aspect of the design rather than the other relies on the researcher’s epistemology. The mixed method research design is chosen to answer the what, why and how of human behaviour. In this respect, Bryman (2008:9) writes:

Bringing quantitative and qualitative findings together has the potential to offer insights that could not otherwise be gleaned. Thus, even when a fusion of the two sets of findings was not envisioned at the outset of a project, it may be valuable to consider whether the findings suggest interesting contrasts or help to clarify each other.

The nature of the present investigation led the researcher to complement the quantitative results with qualitative ones to gain a better understanding of the topic of the study. The use of this methodological triangulation was to validate and expand the quantitative findings with the qualitative ones (Creswell and Plano Clark, 2007). Validation and expansion are done by examining the communicative values of phonemic contrasts found in the speech of Iraqi EFL learners and the various types of communication strategies Iraqi EFL learners used. For this purpose, a concurrent mixed methods research design is used. The purpose of the design is “to obtain different but complementary data on the same topic to best understand the research problem”(Creswell and Plano Clark, 2007:62). It has been shown in the Literature Review Chapter that intelligibility is influenced by various speaker-listener related factors. This

presents another reason for using both qualitative and quantitative data to capture and reflect the richness and complexity involved in investigating intelligibility. The mixed method research adopted in the present study also reflects the dynamic nature of intelligibility which focuses on the productive and perceptive aspects. In the Iraqi EFL context, most of the pronunciation studies were mainly quantitative in nature. The present researcher believes that gathering qualitative data is as important as collecting objective quantitative data. These qualitative data can reveal important points concerning the communicative value of phonemic contrasts and how Iraqi EFL learners used various communication strategies to overcome intelligibility failures due to the mispronunciation of these phonemic contrasts.

Despite the importance of a mixed methods research, Creswell (2007:10) warns that “conducting mixed methods research is not easy. It complicates the procedures of research and requires clear presentation if the reader is going to be able to sort out the different procedures.” A mixed methods research assumes that a researcher will face difficulty in handling two different procedures representing various assumptions about a research phenomenon in a single study. In other words, it reflects the conflict between the rationale of the research and the practice followed. However, this conflict can be resolved by adopting a pragmatic view of the investigation of social phenomena so that the epistemological position taken by researchers would not affect the chosen methodology (Creswell, 2007). The present study used a mixed methods research. The quantitative and qualitative data were collected and analysed and then the two datasets were brought together in the interpretation stage “so that together they form a more complete picture of the problem than they do when standing alone” (Creswell, 2007:7).

4.4.1. Methodological Triangulation

Triangulation is a method used by researchers to enhance the validity and reliability of their findings by confirming, validating and expanding them (Cohen, 2007:142). Methodological triangulation refers to the combination of several research methodologies in one study (Cohen, 2007:142). Triangulation can be used within a method and between methods (Rahman, 2012:156). Within a method triangulation refers to the use of separate measures within one methodological framework which intentionally adheres to one epistemological stance (Rahman, 2012:156). The use of interviews and observations in qualitative research as shaped by the interpretivist paradigm is an example of within method triangulation. This type of

triangulation is usually used when the researcher's interest is not to account for a holistic detailed view of the investigated phenomenon. Also, it does not aim to provide validation and confirmation from different methodological positions (Creswell, 2007:59).

By contrast, across method triangulation refers to the joint effort made by two distinct methodologies in the investigation of a research problem. The aim is to account for a holistic view of the problem as well as to provide rich details which strengthen the validation of the findings (ibid). The choice of triangulation is also determined by the nature of the study and its research aims and questions. Whether within or between methods are used, triangulation can be achieved using different ways such as data, investigator, theory and methodological triangulation (Rahman, 2012:157). This study follows a mixed methods concurrent triangulation research design in the investigation of the productive and perceptive intelligibility of Iraqi EFL learners.

4.5. The Process of Quantitative and Qualitative Research

Quantitative and qualitative research follow the same procedure at the beginning of a research project. They both begin with choosing a topic, deciding on the approach, presenting the research problem and writing the proposal (De Vos 2002:85). However, the rest of the research project follows different procedures. In the present study, the following process is followed:

1. choosing a concurrent triangulation research design.
2. specifying the methods used to gather and analyse the speech data. The speech intelligibility test collected speech production and perception data. These were analysed by one sample t test, one-way ANOVA and Pearson Correlation R. The speaking task used recordings and orthographic transcriptions and it was analysed by a qualitative content analysis.
3. selecting a sample. For the speech intelligibility test, a stratified random sampling technique was employed. For the speaking task, a purposeful sampling technique was used.
4. analysing the data.
5. writing up the research.

The following sections introduce the data collection tools and the justifications for the types of speech data elicited and the instruments involved. These data collection tools include:

- a) Speech intelligibility test
- b) Speaking task

4.5.1. The Speech Intelligibility Test

To measure the productive and perceptive intelligibility of Iraqi EFL learners and to investigate the extent to which these two aspects of intelligibility vary in relation to foreign accent and accent familiarity, a speech intelligibility test is constructed. The test is constructed based on consulting related works done by Bent and Bradlow (2003), Kim (2009), Atechi (2004), Browne (2016), Sereno et al. (2016) and Flege's (1995) SLM (see Appendix D for a copy of the test used). This test consists of two parts: a production intelligibility test and a perception intelligibility test.

4.5.1.1. The Production Intelligibility Test

This test measures the overall productive intelligibility of Iraqi EFL learners and investigates the extent to which this overall productive intelligibility varies in relation to the three levels of segmental production difficulties proposed by Flege's (1995) SLM: similar phonemes, partially similar phonemes and different phonemes. The test is designed to answer research question one of this study. This test consists of three elements: the speakers, the material stimuli and the measurement tool.

1. The speakers

The speakers are 60 Iraqi EFL students who are randomly selected from third year students in the Departments of English at three Colleges in Baghdad: College One, College Two and College Three (For details, see section 4.7.1.).

2. The material stimuli

The material used in the production intelligibility test is a reading passage in English developed by Deterding (2006). This reading passage is recommended by most intelligibility researchers for the assessment of non-native English speakers' pronunciation. It contains the distinctive segmental phonemic features of the English sound system (Saito et al., 2016). Thus, the passage can be said to satisfy the content validity of the test. Based on the contrastive analysis conducted earlier (see section 3.8.), the researcher makes sure that the passage includes words reflecting the three potential levels of segmental difficulty in speech production identified by Flege's (1995) SLM.

There are some arguments for and against the use of reading passages to assess the productive intelligibility of non-native English speakers. For example, Rajadurai (2004:90) argues that the elicited speech data from reading passages tend to be artificial rather than natural. By contrast, Hardman (2010:142) supports the use of a reading passage as its use will restrict intelligibility judgment to pronunciation and disregard any other linguistic and non-linguistic factors which may intervene with this type of pronunciation assessment. In the present study, the choice of a reading passage is made for two reasons. The first reason is to ensure that all words containing the above three difficulty levels in segmental production are tested. The second reason is to control to a certain extent the lexical and grammatical factors which may influence the measurement of productive intelligibility (Cruz, 2003).

3. The instruments

The measurement tool used in the production intelligibility test is an orthographic word transcription which involves word for word writing of the speakers' utterances in standard orthography (see Munro and Derwing, 2005; Browne, 2016; Kim, 2008). Based on my survey of the literature written on intelligibility, the write down procedure was exemplified in different forms such as the gap filling items used by Browne (2016), the cloze test used by Smith and Rafiqzad (1979), the written answers to listening comprehension questions used by Kim (2008) and an orthographic word transcription used by Munro and Derwing (2005). Although the write down procedure is time consuming and requires much effort, its use enables the present researcher to fully answer the associated research question. In support of this, Moyer states that

the use of an orthographic word transcription allows the researcher to observe “the extent to which a word or utterance is recognised at the level of finer acoustic-phonetic detail” (2013:93).

4.5.1.2. The Perception Intelligibility Test

This test measures the overall perceptive intelligibility of Iraqi EFL learners and investigates the extent to which this overall perceptive intelligibility varies in relation to accent familiarity. The test consists of three elements: the listeners, the material stimuli and the measurement tool.

1. The listeners

The same 60 Iraqi EFL students took the role of listeners in the perceptive intelligibility test (For details, see section (4.7.1)).

2. The material stimuli

A listening text in English from the Speech Accent Archives (SAA) produced by three speakers of different first language backgrounds constitutes the material stimuli for the perceptive intelligibility test. The SAA is “composed of read speech samples of more than eighteen hundred speakers. The speakers are from all over the world and they read the common elicitation paragraph” (Minematsu et al., 2014:158).

The first recording was produced by an Iraqi EFL English speaker, representing a matched accent familiarity with the Iraqi listeners. The biographical data available about the Iraqi speaker in the SAA show that the birth place is Baghdad, the native language is Arabic, the age is 29, the gender is male, and the English learning method is academic. The second recording was produced by a British English speaker, representing a mismatched accent familiarity. The biographical data available about the British English speaker in the SAA show that the birth place is Leicester, the native language is English, the age is 35, the gender is female, and the English learning method is naturalistic. The third recording was produced by a Chinese English speaker, representing unfamiliar accent. The biographical data show that the birth place is Hong Kong, China, the native language is Cantonese, the age is 20, the gender is male, and the English learning method is academic.

3. The instruments

In assessing non-native English speech , two common rating scales were employed: holistic and analytic (Taylor and Galaczi, 2011:177). The holistic rating scale is used to measure the overall proficiency level in English (ibid:177).

Cooper (1977:4) defines a holistic rating scale as:

Any procedure which stops short of enumerating linguistic, rhetorical, or informational features of a piece of writing. Some holistic procedures may specify a number of particular features and even require that each feature be scored separately, but the reader is never required to stop and count or tally incidents of the feature.

By contrast, the analytic scale is used to measure detailed features of a sub section of the overall speaking proficiency in English. Bachman and Palmer mention that “analytic scales tend to reflect what raters actually do when rating samples of language use” (1996:211). Commenting on the choice of one type of rating rather than the other, Munro remarks that “the choice of a particular approach depends on the type of speech material that is available or that can be elicited, the kinds of demands that can be placed on listeners and speakers, and the specific research questions to be addressed” (2008:201).

In line with this, the present study develops an analytic five-point rating scale based on the efforts Iraqi EFL learners put in to understand English speech produced by speakers from different first language backgrounds. This five-point rating scale is developed based on the definition of perceptive intelligibility adopted in the present study as well as the information contained in existing rating scales used by Atechi (2004), Browne (2016) and Cruz (2003). This five-point rating scale can be regarded as an adapted version of the scales used by the above researchers. However, it differs from them in two respects. First, it emphasises understanding rather than the mere recognition of the phonetic properties of words. This is achieved by using a contextualised English listening text and extending the definition of the term perception to include phonetic, linguistic and meaning components. This is demonstrated by the definition of the term perception used by Albashir (2008 :24) in his PhD thesis. Albashir (ibid) defines the term perception as “a process that involves a communicative act in which a listener derives meaning from a speaker”. Hence, the use of the term perceptive intelligibility with reference to listeners’ understanding is an updated version to the outdated one which

associates perception to the recognition of the phonetic properties of words and utterances rather than meaning (see Field, 2005; Jenkins, 2000). Second, listeners effort is determined based on the three levels of accent familiarity suggested by Bent and Bradlow (2003). On this basis, the three English speakers were chosen reflecting the three accent familiarity levels: matched, mismatched and unfamiliar (see Appendix D for the rating scale used to assess the perceptive intelligibility of Iraqi EFL learners).

4.5.2. The Speaking Task

For the purpose of validating and expanding on the quantitative findings, the speaking task is used in the qualitative aspect of the study. This task is used to elicit speech samples from twelve Iraqi EFL speakers (For details on selecting these speakers, see section 4.7.2.). According to Clark (1979:36), two speaking tasks are often employed to elicit speech samples for an investigation: a semi-free speaking task and a direct free speaking task. The semi-free task is used to generate somehow artificial speech samples in the sense that the speakers are not completely free in choosing their words. By contrast, the direct speech task is used to elicit speech data that is natural and akin to real life situations (Atechi, 2004). In this regard, the participants are engaged in natural face to face interaction, with no control imposed on their speech delivery (Clark, 1979:36).

The present study uses a speaking task which generates semi free speech samples. The Iraqi EFL learners were required to talk on general topics already prepared by the researcher or chosen by themselves. These topics refer to Sports, Travels, Education, Holidays, Hobbies, Friendship, Shopping and so on. The use of the speaking task was based on two criteria. The first criterion requires that the topics should be of general interest to the speaker. The choice of such familiar topics is to ensure that enough speech data will be generated by each speaker since the speaker is supposed to possess the vocabularies necessary for such topics. The second criterion is that the duration of time should be enough to generate the required speech sample. In this respect, Cruz-Ferreira (2006:43) mentions that “any collection of data of course involves a set of choices, which constrain the ways of querying the data according to the purposes that the data will serve.” Having presented the data collection tools, the next section introduces the pilot study.

4.6. The Pilot Study

To assess the above data collection tools in terms of their instructions, procedures, the process of analysis and the estimated time needed, a pilot study was conducted before the main administration of the study. Piloting can detect weaknesses in the design and instrumentation of the research. It can also check whether the data obtained are precise and enough to answer the research questions (Bell, 2005:84).

4.6.1. Timeline of the pilot study

The pilot study was conducted two months prior to the main study. It was conducted on third year Iraqi students in the Department of English at one of the three Colleges in Baghdad. In this respect, third year students in the Departments of English at three Colleges in Baghdad constitute the population of the research. These third-year students in College One were chosen for the pilot study because they share similar characteristics to the research study participants (see section 4.6.2 for details). Based on my prior conversations with the Heads of the Departments and my colleagues at the three Colleges, I got the oral approvals to conduct my research.⁶As confirmed by Al-Hilu (2017:210), verbal approval is sufficient to start collecting research data in the Iraqi EFL context. In my case, this means that the Ethical Approval I obtained from London Metropolitan University is a valid and recognised official document for me to start collecting my data in Iraq. In this respect, I did not need to establish or follow different procedures for that purpose (ibid).

For my pilot study, I chose third year students in the Department of English at College One. On the 4th of September 2017, I visited the Department of English at College One and met with the Head of the English Department. Based on what is said above, I was granted access to the class list of third year Iraqi EFL students from which I randomly selected five students as the sample for the quantitative aspect of the pilot study (see section 4.6.2 for details). On the 5th of September, I returned to the English Department where a colleague of mine called the five students for me. I met the students in my colleague's room. I explained my research to the students. I told them about its importance and that their participation would help me complete

⁶ At College One, Dr Dhea Mizhir, dhea.mizhir@ircoedu.uobaghdad.edu.iq
At College Two, Dr Khalid Sharhan, dr.khalidsharhan@alkadhum-col.edu.iq
At College Three, Dr Saad Swade, saad.swade@uomustansiriyah.edu.iq

my study and achieve its goals. I also told them that their participations would be voluntarily and that they could withdraw from the research at any time. Also, they were told about the confidentiality of their participation. All the five students were willing to participate and no one objected. After obtaining their written consents (see Appendix I), we agreed to meet the following day at the language lab. On the 6th of September, I met the students at the language lab and reminded them again of the purpose of the research and its ethics. When the students were ready, I piloted the speech intelligibility test first. The test consisted of two parts: a production intelligibility test and a perception intelligibility test. On the 7th of September, I piloted the speaking task with three students. In piloting this mixed methods study, the sample for the qualitative aspect was selected from the five students who had already participated in the quantitative aspect of the study. In this regard, three students were purposefully selected from these five students (For further details on the criteria used to select the participants and the justification for the sample size, see section (4.6.2).The three students were requested to talk in English for two to three minutes on topics from their own or chosen from a suggested list of topics in front of them. The following table represents the timeline of the pilot study.

Date	Action taken
4.9.2017	Meeting the Head of the English Department at College One and got his oral approval to conduct the pilot study
5.9.2017	Meeting the students, explained my research aims and ethics
6.9.2017	piloting the speech intelligibility test
7.9.2017	Piloting the speaking task

Table 4. 1. Timeline of the pilot study

4.6.2. Participants in the pilot study

The participants in the pilot study were selected based on sharing similar characteristics to the research study participants. They reflected the general features of the targeted population in that they were all third year Iraqi EFL students of both gender and about the same age who received the same mode of formal instructions in English at schools and whose first language background was Arabic. In this regard, I should emphasise that the present study was not

interested in results due to gender differences. Rather, the aim was to provide an alternative assessment in pronunciation based on intelligibility rather than perfection in mastering the sound system of English. Also, it was to emphasise the suitability of such an intelligibility-based assessment in the use of English in its global context. For this reason, the present research sample would reflect the general characteristics of the population even if gender did not surface in the research sample. As far as the selection of the research sample for this study is concerned, I used a simple random sample method in the quantitative aspect of the study. Using this method, all the 86 names of third year English students at College One were mixed together then five students were selected randomly from the class list.

One may argue that the sample size is small i.e., five students only. An elaborate discussion of this issue will be presented in the section dealing with the sample in the main study. Taking the sample from third year students was made for the following reasons. First, these students were taught English pronunciation in the first and second year of their academic study. This would exclude the possibility of not receiving practical and theoretical pronunciation instructions to justify the occurrence of pronunciation errors. Second, based on their year of academic study, these students were assumed to be of a good proficiency level in English. They were near to their final year of graduation. This would ensure that enough speech sample could be collected from such students for the research. Third, when graduating, these students will be teachers of English at intermediate and secondary schools. Hence, I find it necessary to examine whether their English pronunciation is good enough to be a good representative English model for their students to follow.

In the qualitative aspect of the study, a purposeful sampling method was adopted in the selection of the sample. In this regard, three students were selected from the five Iraqi EFL students. The selection of these students was based on their performance in the speech intelligibility test. In selecting the students, I used two criteria. The first criterion was related to the pronunciations of some words identified in the reading passage by the researcher. These words contained the segmental phonemes of high functional load which were often confused by the Iraqi EFL learners as revealed by the relevant sections in the literature review chapter of the study (see section 3.8). The second criterion was based on my personal judgment regarding the ability of the speaker to complete the speaking task successfully. During the speech intelligibility test, every time I identified such a student, I asked if he or she was willing

to participate in the qualitative aspect of the pilot study. When the student was willing to participate, we agreed to meet in the language lab the following day.

4.6.3. Recording and transcription of the pilot study

Except for the perception intelligibility test, both the production intelligibility test and the speaking task were recorded and transcribed by the researcher. The perception intelligibility test adopted a listening text in English from the Speech Accent Archives (SAA). The SAA is “composed of read speech samples of more than eighteen hundred speakers. The speakers are from all over the world and they read the common elicitation paragraph” (Minematsu et al., 2014:158). The text was recorded and transcribed by the author of the SAA.

Before presenting the types of transcription used in the present study, I find it necessary at this point to clarify the term transcription in relation to its types and the nature of research undertaken. Most researchers agree that the term transcription refers to the process of reproducing spoken words into written text (Shenton, 2004; Korstjens Moser and 2018). However, based on my Literature Review Chapter, this written version of spoken data can take different forms. If only pronunciation criteria are used, the written text will contain phonetic symbols reflecting the actual production of words by the speaker. In this respect, two types of transcription can be identified: phonetic and phonemic transcription (Roach, 2009; Crystal, 2008). Phonetic transcription is a detailed phonetic representation of how the speaker pronounced the sounds of words and utterances. This transcription is enclosed by square brackets. A phonetic transcription of the word pen, for example, will be [p^hɛ̃n], where the [p^h] and [ɛ̃] are aspirated and nasalised respectively. By contrast, phonemic or broad transcription is the representation of the sounds of words and utterance in terms of phonologically contrasting phonemes and it is enclosed by slant lines. A phonemic transcription of the word pen, for example, will be /pen/. If other linguistic and non-linguistic criteria are used besides pronunciation to transcribe the spoken data, two other types of transcription are identified in the literature: orthographic word transcription and verbatim transcription. These two types of transcription refer to the writing of the spoken words in their original spellings. The difference between the two transcriptions is whether all the spoken data should be transcribed in their entirety or the transcription should be limited to specific words in the data.

In line with most intelligibility researchers and for the purpose of the present study, I used an orthographic word transcription when the words are correctly pronounced by the speaker, whereas a phonemic transcription is used when the speaker mispronounced the words. As I have stated earlier, Gimson's (2001) MGI is used as the reference pronunciation model. A sample of the transcription used in the production intelligibility test is given in Appendix E.

4.6.4. Reflection on the pilot study

Based on my observations and oral discussions with the participants on some aspects of the study, the pilot study provided some useful feedback on the speech intelligibility test and the speaking task. Here, I should emphasise that the data collection tools with their instructions and following procedures were easy to follow and accomplish. For example, the instructions regarding the production intelligibility test required the students to read a passage in English. The perception intelligibility test required the students to listen and rate on a five-point Likert scale their understanding of each speaker. The instructions regarding the speaking task required the students to talk on topics of general interest between two to three minutes. Based on these instructions and procedures, no serious feedback was received to cause major modifications in the speech intelligibility test and the speaking task. However, some minor modifications required a slight change in test procedures, in the wordings of some words in the five-point Likert scale and in the choice of the topics used in the speaking task. Except for these, the pilot study ran smoothly.

In conducting the speech intelligibility test, my plan was to call each of the five students one at a time and ask him or her to read the passage and then listen to and rate individually each of the three English speakers. Following this procedure with one of the five Iraqi EFL students, I felt that the other students would get bored waiting for their turn to come. I was afraid that their engagement with the test would be weak. Moreover, I felt that I would need more time to complete the whole test. Thus, I decided that a whole group listening test should be done first followed by individual reading session. This change of test procedure was supported by the participants who mentioned that it saved time and effort. From my perspective, this modification in test procedure will be very useful in the administration of the test for the main study, bearing in mind that the sample of the main study is 60 students. With such a large sample, the first planned test procedure will be difficult to implement. Although the wordings

at each point in the rating scale were simple, the word intelligibility seemed to be an issue as some students asked for an explanation of the term. Hence, instead, I used the word understanding rather than intelligibility. The speaking task was not difficult to follow as its instructions and procedures were simple. In conducting the speaking task, I followed a similar procedure as adopted in the IELTS Speaking Section which was similar to the one used by most intelligibility researchers. In this respect, the students were asked to select a topic, given time to formulate their ideas and start talking about that topic for two to three minutes. The choice of topics by the students was based on two criteria: general interest and not controversial. What I observed in the speaking task was that the speakers were able to perform the speaking task within the time limit already specified. This time duration was decided based on the studies presented in the Literature Review Chapter of the study. Although the task went well, one student preferred to talk on a topic of his own choosing. I gave permission to use the topic on the condition that it should not be controversial.

4.7. The Main Study

The present study aimed at measuring the productive and perceptive intelligibility of Iraqi EFL learners in relation to foreign accent and accent familiarity. For this purpose, a speech intelligibility test was developed. The test consisted of two parts: the productive intelligibility test and the perceptive intelligibility test. The findings of the speech intelligibility test were triangulated qualitatively using a speaking task in English produced by twelve Iraqi EFL speakers. The speaking task at the qualitative aspect of the study aimed to validate and expand on the quantitative study by investigating the communicative values of phonemic contrasts and the communication strategies used to overcome intelligibility problems. The following sections present a detailed account of the timeline, conduct, participants, recording and transcription process of the main study.

4.7.1. Timeline of the main study

The successful administration of the pilot study encouraged me to follow almost the same procedure in the main aspect of the study. The first step I took when I arrived in Iraq on the 6th of December 2017 was to visit the three Colleges involved in the study. Although I had the oral approval to conduct my study at these Colleges (see section 4.6.1), the purpose of the visit was to ensure that the data collection procedures would be easy to administer. Having previously

taught at these Colleges, every staff member there offered help and support to finish my data collection successfully. During my visits, I obtained the list of third year students at the Departments of English in these Colleges. Also, I visited some of the classes and explained my research and ethics in an attempt to encourage and persuade the students to participate in the research (see section 4.7.1). All my frequent visits were fruitful and ensured a successful implementation of my data collection procedures.

The data collection started on 10 December 2017 and finished on 15 January 2018. During this period, every College was visited several times to collect the data for the perception test, the production test and the speaking task. The time frame of the the main study is shown in the following table.

	No. of visit	Date of visit	Data collected
College One	1 st visit	10/12/2017	Quantitative (speech perception)
	2 nd visit	13/12/2017	Quantitative (speech perception)
	3 rd visit	17/12/2017	Quantitative (speech production)
	4 th visit	20/12/2017	Quantitative (speech production)
	5 th visit	24/12/2017	Qualitative (free speech)
College Two	1 st visit	11/12/2017	Quantitative (speech perception)
	2 nd visit	18/12/2017	Quantitative (speech perception)
	3 rd visit	25/12/2017	Quantitative (speech production)
	4 th visit	7/1/2018	Quantitative (speech production)
	5 th visit	9/1/2018	Qualitative (free speech)
College Three	1 st visit	12/12/2017	Quantitative (speech perception)
	2 nd visit	19/12/2017	Quantitative (speech perception)
	3 rd visit	26/12/2017	Quantitative (speech production)
	4 th visit	10/1/2018	Quantitative (speech production)
	5 th visit	14/1/2018	Qualitative (free speech)

Table 4. 2. Timeline of the main study

4.7.2. The production intelligibility test

4.7.2.1. Selecting the participants

My research population was third year Iraqi EFL students in the Departments of English at three Colleges in Baghdad: College One, College Two and College Three. To choose a sample from this population for the production intelligibility test, I used a stratified random sampling method. By using this method, the population of the study was “stratified on more than one variable” (Dörnyei, 2003:73) and then samples were “selected at random from the groups defined by the intersections of the various strata” (Dörnyei, 2003: 73). In this respect, the strata were all based on third year students of both gender and about the same age who received the same mode of formal instructions in English at schools and whose first language background was Arabic in the three Colleges in Baghdad. The process used in selecting the sample for the quantitative aspect of the study is shown in figure (4.2) below.

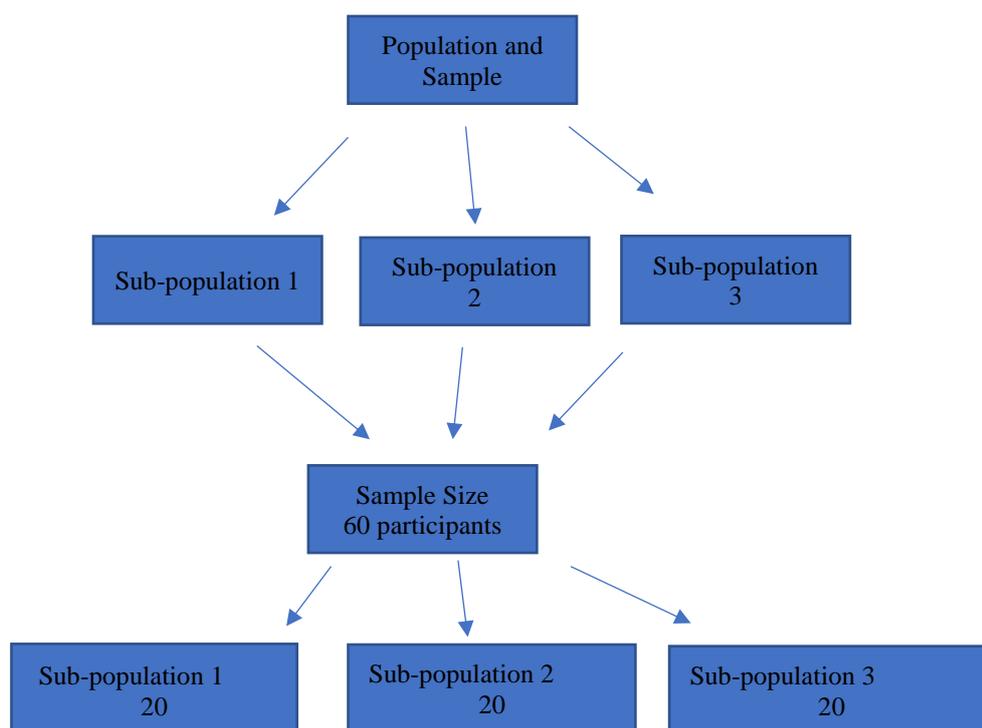


Figure 4. 2. Population, sub-populations and sample used

The above figure shows that my research population is already divided among three Colleges. By using a stratified random sampling method, my aim was to define my population to ensure its homogeneity, hence a sample can be selected at random. For this reason, I stated above that the strata or sub-populations were all based on third year students of both gender and about the same age who received the same mode of formal instructions in English at schools and whose first language background was Arabic. To ensure homogeneity and representativeness of the sample, failed students and students whose mother tongue is not Arabic were all excluded from the list of students' names. Such information is provided in the class list. Besides establishing homogeneity and representativeness, the use of a stratified random sampling method excluded the possibility of a fluke factor at these Colleges which could influence the research outcome. Having defined my population in this way, I could randomly select the required number of participants from each stratum. This was done by mixing the names in each of the three Colleges and then picking up names at random.

One might argue as why the sample of the study was 60 students in total and why an equal number of students was selected from each of the three Colleges. As far as limiting the sample to 60 students is concerned, this was made for the following reasons. The first reason was related to the relative uniformity or homogeneity of the research population. In the present research, the targeted population was considered an approximately homogeneous group based on the above stated features as represented in the sample. Thus, these 60 students can be considered as representative of the general characteristics of the larger population. The second reason was related to the nature of the research itself. A research conducted on pronunciation differs from the one conducted on other aspects of language in the sense that pronunciation research deals with articulatory and auditory features which develop in approximately the same way for learners especially when these learners share the same language background and the context of learning. For example, Al-Ani's (1970) PhD study relied on the researcher himself as the only informant to provide a phonetic and acoustic description of the Iraqi Arabic sound system. In his investigation of the Rwandan learners' intelligibility, Munyandamutsa (2005) used 60 participants in his study. Kaur (2009) used 22 participants. In his investigation of the effect of accent familiarity, Browne (2016) employed 87 participants. The small number of participants was also revealed by most of the studies reviewed in the Literature Review Chapter (see Schoener, 2015; Jenkins, 2000; Hardman, 2010; Al-Abdely and Thai Yap, 2016; Kim, 2009; Holland, 2016). The third reason was related to Cohen's (2007:101) rule of thumb concerning the sample size. Cohen (*ibid*) recommended that the minimum requirement of the

sample size should not be less than 30. By contrast, the maximum requirement was left for other considerations related to the nature of the research and the characteristics of the population as explained above.

One may raise the question as why 20 students were selected from each of the three Colleges resulting in having the sample of 60 students. I have already stated that third year students in the three Colleges in Baghdad represent the population of the study. By using a stratified random method, I have also stated that the strata were all based on third year Iraqi EFL students of both gender in the three stated Colleges. To ensure representativeness and not to miss students from each of the three sub-populations or strata, an equal number of students was selected from each College. In the present study, the participants were all third year Iraqi EFL students. These students followed the same mode and route in learning English. Being EFL learners, they received the same formal instructions in English at schools. In such EFL contexts, the use of English is limited to classroom settings. These students were taught English pronunciation in the first and second year of their academic study. Based on the above characteristics and their academic year of study, I have determined that the participants were roughly at the same level of English. My decision was also due to the fact that I was interested in measuring the general intelligibility performance level of EFL learners in the Iraqi context and not to identify variations based on individual differences.

As far as the proficiency level of the participants is concerned, they were all third year Iraqi EFL students. These students followed the same mode and route in learning English. Being EFL learners, they received the same formal instructions in English at schools. In such EFL contexts, the use of English is limited to classroom settings. These students were taught English pronunciation in the first and second year of their academic study. Based on the above characteristics and their academic year of study, I determined that the participants were at the same level of English.

4.7.2.2. The conduct of the test

This test required the students to read a short reading passage in English. In conducting this test, each student sat on a chair in front of me. Recording started when the student was ready to read the passage. When finishing his/her reading, I thanked the student and allowed him or her to leave the room. Beside assessing the students' productive intelligibility, this test helped me select the speakers who would participate in the qualitative aspect of the study (For details, see section 4.6.2.). Regarding the transcription used, I have already mentioned that two types of transcriptions were used simultaneously: orthographic word transcription and phonemic transcription. These two types of transcriptions were used side by side in the quantitative and the qualitative aspect of the study. In the production intelligibility test, for example, I first transcribed the reading passage in phonemic transcription following Gimson's (2001) MGI (see Appendix F for the phonemic transcription of the reading passage). This transcription helped me become familiar with how every word in the reading passage should be pronounced by the speaker. After completing the transcription, I listened to the recordings. If the speaker's performance was in line with the transcription which I had already made for the reading passage, I wrote in orthographic spelling what the speaker had said (using orthographic word transcription). When the speaker mispronounced any content word in the reading passage, I wrote that word in exact phonemic transcription reflecting its actual pronunciation by the speaker. This side by side transcription of the speech data in the quantitative and qualitative aspect of the study was important in two ways. First, I could measure the intelligibility of Iraqi EFL learners. Second, I could identify the types of phonemic contrasts found in their performance. Based on the transcription and its related analysis, I could answer the research questions of the study.

In transcribing the speech data, I was the primary researcher involved. However, to ensure the accuracy of the transcribed data, a friend of mine with a PhD in linguistics⁷ was requested to transcribe a sample from the recorded materials. In addition to this, I followed several considerations which enhanced the accuracy of the transcriptions (for details, see section 4.12. below). For a sample of the transcription used in the speech production intelligibility test, the reader is referred to appendix E.

⁷ Rasim Tayeh, rasimtayeh@alkadhum-col.edu.iq

4.7.3. The perception intelligibility test

The perception intelligibility test used a listening text in English from the Speech Accent Archives (SAA). The SAA is “composed of read speech samples of more than eighteen hundred speakers. The speakers are from all over the world and they read the common elicitation paragraph” (Minematsu et al., 2014:158). The text was recorded and transcribed by the author of the SAA. In the present investigation, the 60 Iraqi EFL students were told that they would hear one English text spoken by three English speakers from different first language backgrounds: an Iraqi English speaker, a British English speaker and a Chinese English speaker. A sample of the transcription of the listening text is given in appendix G.

In conducting this test, a whole group listening session was used. The 60 Iraqi EFL students were told that they would hear one English extract spoken by three English speakers from different first language backgrounds: an Iraqi English speaker, a British English speaker and a Chinese English speaker. All the 60 Iraqi EFL students listened to one English speaker at a time and then assessed on a five-point Likert scale their understanding of the speaker. The order of presenting these three speakers to the Iraqi students followed the levels of accent familiarity suggested by Bent and Bradlow (2003), starting with the Iraqi, the British and the Chinese speaker. The Iraqi students listened to the speech only once. Then, they assigned a particular score to the speaker reflecting their understanding of that particular speaker.

In the present investigation, intelligibility refers to a pronunciation proficiency level which enables non-native English speakers to produce and understand English speech successfully. This pronunciation level is determined based on its convergence and divergence from Gimson’s (2001) MGI. In this respect, male/female voices have no impact in the assessment of intelligibility. I was not interested in measuring variations of intelligibility due to gender differences, if any.

4.8. The Speaking Task: Recording and Transcription

In conducting the speaking task, I followed the same procedure adopted in the IELTS Speaking Section. In this respect, the students were asked to select a topic, given time to formulate their ideas and start talking about that topic for two to three minutes. A purposeful sampling method was adopted in the selection of the 12 students for the qualitative aspect of the study. These students were selected from the 60 Iraqi EFL students. Like the selection procedure for the 60 students for the speech intelligibility test, I selected an equal number of students from each of the three Colleges until I arrived at the required sample of 12 students. The selection of the 12 students was based on their performance in the speech intelligibility test. In selecting these students, I used two criteria. The first criterion was related to the pronunciations of some words already specified in the reading passage by the researcher. These words contained the segmental phonemes of high functional load which were often confused by the Iraqi EFL learners as revealed by the relevant sections in the literature review chapter. The second criterion was based on my personal judgment regarding the ability of the speaker to complete the speaking task successfully. During the speech intelligibility test, every time I identified such a speaker, I asked if he or she was willing to participate in the qualitative aspect of the study.

All the speeches were recorded and transcribed following the type of transcription already described for the speech intelligibility test. The two types of transcription, the phonemic and the orthographic word transcription, were used side by side. I listened to the speech samples produced by the Iraqi speakers and wrote in orthographic transcription what the speakers had said following Gimson's (2001) MGI. If the speaker mispronounced any content word in the speech sample, I wrote that word in its phonemic transcription reflecting how the speaker pronounced the word. The transcription used in the speaking task is given in appendix H.

4.9. Data Analysis

The quantitative data obtained from the speech intelligibility test and the qualitative data obtained from the speaking task were analysed using two different approaches.

4.9.1. Analysis of the Speech Intelligibility Test

The quantitative data from the speech intelligibility test were analysed in descriptive and inferential statistic terms using the Statistical Package for Social Sciences (SPSS). The speech intelligibility test was used to measure the productive and perceptive intelligibility of Iraqi EFL learners in relation to foreign accent and accent familiarity. Three types of inferential tests were used: one sample t test, one-way ANOVA and Pearson correlation R. The one sample t test was used first to measure the overall productive and perceptive intelligibility of Iraqi EFL learners' accented English. Second, the test was used to measure the productive and perceptive intelligibility of Iraqi EFL learners in relation to every level of a foreign accent and accent familiarity. A one-way ANOVA examined whether there were differences in the mean scores of the three levels of a foreign accent and accent familiarity when assessing the productive and perceptive intelligibility respectively. If significant differences were detected, a post hoc test was conducted to identify where these differences occurred. Finally, Pearson correlation R was used to find out if there was any relationship between the productive and perceptive intelligibility of Iraqi EFL learners.

4.9.2. Analysis of the Speaking Task

Data analysis is considered the procedure of "bringing order, structure and meaning to the mass of collected data" (DeVos et al., 2002:339). In the present investigation, it was emphasised that the qualitative analysis aimed to expand and validate the quantitative findings. For this purpose, a qualitative content analysis was used to identify the various categories and themes found in the speech of Iraqi EFL learners. The identification of the initial categories relied heavily on the works done by Tarone (1977) and Brown (1088). Other works done by Kirkpatrick (2007) were also used.

4.9.2.1. Qualitative Content Analysis

This section benefited a great deal from an article published by Cho and Lee (2014) focusing on grounded theory and qualitative content analysis. In the present study, a qualitative content analysis is applied to analyse the speech data obtained from the speaking task performed by twelve Iraqi EFL speakers. The aim of the analysis is to identify content categories which can validate and expand the quantitative findings. A qualitative content analysis is defined as “a research method for subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns” (Hsieh and Shannon, 2005:1278). There are three approaches to qualitative content analysis: directed, conventional and summative. The present study adopts a directed qualitative content analysis approach. According to Hsieh and Shannon (2005:1281), the goal of a directed approach to content analysis is:

to validate or extend conceptually a theoretical framework or theory. Existing theory or research can help focus the research question. It can provide predictions about the variables of interest or about the relationships among variables, thus helping to determine the initial coding scheme or relationships between codes. This has been referred to as deductive category application.

A qualitative content analysis emphasises that the themes and categories should be derived from a selected aspect of the data by applying a data reduction process. A data reduction process is achieved by limiting the “analysis to those aspects that are relevant with a view to your research question” (Schreier, 2012:7). In the present study, data reduction is arrived at by adopting a framework for capturing intelligibility failures. This framework is basically based on the definition of intelligibility used in the present study and Gimson’s (2001) MGI. The definition emphasises understanding over production accuracy. Thus, the speech samples analysed are restricted to instances where a pronunciation error interfered with understanding.

When conducting a qualitative content analysis, Cho and Lee (2014:4) advises that researchers should make prior decisions on two aspects: category development and the level of meaning extracted from the text. As far as category development is concerned, a researcher should decide on the appropriate inductive and / or deductive approaches in the analysis. An inductive approach to the analysis of data is recommended when there is quite limited knowledge about

the phenomenon under investigation. Thus, themes and categories are all generated from the data. In contrast, the deductive approach commences with categories and themes already established by relevant theories and research (Cho and Lee, 2014:4). The second decision which a researcher should make is in relation to the type of meanings or themes which can be derived from the data: manifest and latent content. Manifest content is arrived at if a researcher's interest is on coding the surface meaning of a text. By contrast, latent content means that the researcher's interest is on coding the underlying meaning of a text (ibid). In this study, the chosen qualitative content analysis is based on a deductive category development adhering to the manifest content meanings. Gulanowski (2011:19) summarises the analysis process of deductive category development in three core procedures:

1) Determining the unit of analysis

Researchers should decide on the unit or the aspect of data they intended to analyse. The decision is often made in relation to the research questions of the study. This first step is referred to as data reduction. It has already been emphasised that decisions on the aspect of speech for analysis is based on the occurrence of pronunciation errors which interfere with understanding.

2) Establishing the categories

Building categories are important in summing up a large text into fewer themes or categories. In this study, initial coding of categories is based on the categories already established by relevant theories and works introduced earlier. The researcher took all possible measures to ensure that the categories did not overlap with one another. These categories should be in complementary distribution, with no overlapping and no additional ones could be later found in the speech samples under analysis.

3) Interpreting the results

The content categories identified in terms of the functional loads of phonemic contrasts and communication strategies were meant to provide further evidence to validate and expand the quantitative findings. The validation and expansion of the quantitative findings were achieved by investigating the functional load of phonemic contrasts and the various communication strategies used by Iraqi EFL speakers.

4.10. Validity and Reliability of the Speech Intelligibility Test

To ensure the speech intelligibility test is valid and reliable, a pilot study was carried out. The data collection process with its associated instructions were also piloted. The validity of the intelligibility test is accomplished if it measures in a balanced way the scope of the research questions. Validity refers to whether an instrument measures what it supposes to measure. According to Cohen (2007:105), validity should not be interpreted in its restricted outdated version. It is true that a test is valid when it measures what it supposes to measure. However, great care should also be considered to improve validity through careful sampling, appropriate instrumentations and statistical treatments. As far as the validity of the whole test and its measurement tools are concerned, the researcher makes his effort that all aspects of the test are representative in content, internal and construct validity. To establish the content validity of the test, the researcher makes certain that all segmental phonemes investigated are represented. It is ensured that all possible types of segmental phonemes have surfaced in the speech data. This is done by carefully choosing a reading and a listening passage in English which include all the distinctive phonemic aspects of English. In this respect, the researcher uses a reading passage entitled the ‘The North Wind versus a Wolf’ by Deterding (2006) and a listening text from the Speech Accent Archives (SAA). These two texts are recommended and used by many researchers in intelligibility pronunciation studies.

As far as the construct validity is concerned, the construction of the speech intelligibility test has benefited from other intelligibility test investigating the same intelligibility aspects (Cohen, 2007). To eliminate any risk affecting the construct validity, the researcher employs “an elicitation measure that captures the context of speech” (Kim, 2008:9).

In the present study, the speech intelligibility test is based on related studies by Munro (2005), Kim (2008), Browne (2016) and Cruz (2003). The interpretation of intelligibility as well as the theories behind language acquisition emphasise the duality of speech production and perception. Thus, the speech intelligibility test is constructed to reflect these two aspects of intelligibility, production and perception. The test is also both quantitatively and qualitatively investigated. Using qualitative and quantitative data can provide alternative assessments of intelligibility and expand the quantitative factors by examining what communication strategies Iraqi EFL learners used to overcome intelligibility problems. Cohen (2007) explains that triangulation helps in gaining a detailed picture of a research topic by examining it from all its

sides (DeVos, 2002:341). The following figure demonstrates the use of triangulation in the present study.

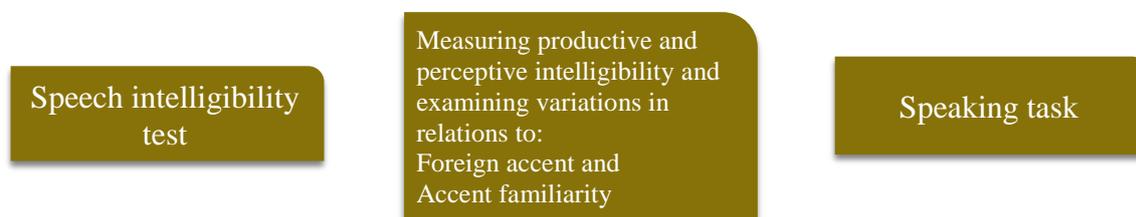


Figure 4. 3. Triangulation of data collection

Reliability refers to the consistency of results over time (Cohen, 2007:117). According to Dörnyei (2007:50), reliability is “the extent to which our measurement instruments produce consistent results in a given population in different circumstances”. There are four approaches to determine the reliability of the speech intelligibility test: test retest, alternative form, split half and Kuder- Richardson (Man, 1985). Test retest was used to confirm the reliability of the speech intelligibility test used in this study.

4.11. Trustworthiness of the Research

This section addresses the issue of trustworthiness in research. The term trustworthiness refers to the trust that researchers and readers place in the research and its findings. To ensure that a research project is worthy of attention, researchers should meet the set of criteria relevant to the type of research they are undertaking. As far as my present study is concerned, I have employed several strategies to ensure that the criteria of trustworthiness are established in both the quantitative and the qualitative aspects of the study.

In the quantitative aspect of the study, I explained the criteria of validity and reliability of the speech intelligibility test and showed how they were established (see section 4.10). In the relevant sections, I presented a discussion of how I conducted the research in terms of data collection, the participants involved, the recording and transcription processes (see sections 4.7 and 4.8). The purpose of this section is to demonstrate how the research was done in accordance

with the trustworthiness criteria of qualitative research. In this respect, Guba (1981, cited in Shenton, 2004:63) emphasises the existence of four essential criteria parallel to validity and reliability. These trustworthiness criteria are regarded as an indication that a research and its related findings can be trusted by readers and researchers. They include: credibility, transferability, dependability, and confirmability. Each of the above criteria will be explained in terms of related literature and relevance to the present investigation. Krostjens and Moser (2018:121) defines credibility as the fit between the participants' original data and the research findings. In other words, it refers to whether the findings represent correct information drawn from the participants' original data. In this aspect, researchers recommend several strategies to establish the credibility in research. These strategies include prolonged engagement, persistent observation, triangulation, member check, reflective commentary, peer scrutiny of the research and frequent debriefing sessions (Shenton, 2004; Nowell, et al. 2017; Krostjens & Moser, 2018). In the present study, credibility or the fit between participants' data and research findings was achieved through peer scrutiny of the research and member check. During my PHD journey, I had to present a progress report about my work at the end of each academic year. This inside scrutiny of my research by the university provided me with interesting feedback. One main feedback was how to relate the use of communication strategies to pronunciation and not lexical problems. In its relevant section, this link was explained in terms of the topics chosen, the analysis conducted and the findings of previous research (see section 5.4.2). Outside the university, I attended various conferences and workshops which covered topics related to pronunciation research and the intelligibility issues. In such scholarly meetings, the importance of the functional load principle in intelligibility pronunciation research was highlighted by researchers such as Kirkpatrick in 2015 at Goldsmiths, University of London and Saito in 2016 at Birkbeck University. Another source which enhanced the research credibility was the strategy of member check whereby my transcription of the participants' data was checked by a colleague who has a PhD in linguistics (see section 4.13 for details on transcription issues).

The transferability criterion, parallel to external validity, refers to the degree to which the results of a qualitative research can be transferred to other contexts or settings. The strategy used to ensure transferability is thick description of the research context (Krostjens & Moser, 2018:122). In the present research, I provided substantial description of the research context in terms of materials used, participants involved, and the pronunciation approaches employed (see Chapter Two for details). Based on such information, the transferability of the present research findings is left to the decisions of the readers. The dependability criterion, parallel to reliability,

refers to the extent to which the study can be repeated by other researchers so that similar rather than contradicting results can be arrived at. The strategy used to ensure this is audit trail (ibid). The same strategy of audit trail can be used with confirmability which means that the research findings can be confirmed by other researchers and these findings are not derived from the researcher's imagination. In this research, all the decisions concerning the research process in terms of analysis and conduct were explained (see section 4.7 and 4.8) and samples of the research transcribed data were provided in appendices. To give credits to this research and to ensure that it can be repeated and confirmed by other researchers, I provided samples in the relevant appendices. For example, appendix H shows most of the participants' original data in the qualitative aspect of the study along with the transcription of how each speaker pronounced the words. In a similar vein, appendix E shows the participants' original data regarding the production intelligibility test and the transcriptions of the words which were mispronounced by all the 60 Iraqi EFL learners in the reading passage.

4.12. Transcription Issues

This section addresses the issue that if a researcher or his participants have translated anything and that would most certainly include transcription, the researcher should include a section on the trustworthiness of the transcription/ translation to account for the accuracy of the data and research. The present researcher and his participants have not been engaged in any sort of translation. By contrast, transcription has been used extensively by the researcher in the quantitative and qualitative aspects of the study. Hence, the issue that this section addresses is how the researcher ensures that the transcription is carried out faithful to the original spoken text. In section (4.6.3), I explained the type of transcription adopted in the present study. To ensure the accuracy of the transcribed data, several considerations were taken by the researcher. First, my transcription of the speech data was checked with another one done by an Iraqi PhD holder in linguistics who transcribed a sample of the speech data (see section 4.7.1.2). Second, the transcription of speech data was limited to phonemic rather than phonetic transcription (see section 4.6.3). According to the seminal article by Abercrombie (1949:115), this type of transcription represents the minimum phonetic proficiency level that an English language pronunciation teacher should possess. Third, the transcription was the outcome of an iterative process. The researcher first familiarised himself with the data by listening to the speech data without transcribing them. A second listening was then conducted to transcribe the speech data.

A final listening was made to recheck the transcription. Fourth, the transcription of the data was not left to the researcher's intuition, but it was checked according to a pronunciation reference, namely Gimson's (2001) MGI. Fifth, the transcription was enhanced by the researcher's familiarity with the participants' accent. The researcher shares the same native language with the research participants. This speech intelligibility benefit based on accent familiarity enhanced the accuracy of the transcribed data.

4.13. Ethical Issues

Researchers should identify the ethical issues that may be pertinent to a research project. In a research project, four ethical aspects should be considered: informed consent, privacy, anonymity and confidentiality. For the present investigation, ethical approval was granted by the London Metropolitan University Research Ethics Review Panel on 12/05/2016 (see Appendix J). All information which might lead to reveal the participants' identities was coded so that only the researcher had access to them. Information about the participants was regarded confidential. Furthermore, the informed consent to participate (Appendix I) also implied that the participants could withdraw at any time. Also, the purpose of the study was explained in such a way that the participants would not think that they were incompetent. The purpose of and the rationale for the investigation were explained in depth to the participants. The data gathered were kept securely and could be accessed only by the researcher. In this respect, Cohen et al. (2007:49) states that there is a need to balance the role of the researcher, as a scientist seeking insights, and the rights of the subjects whose values or interests might be compromised by their participation in research. A copy of the research ethics application approval by the Ethics Panel at London Metropolitan University is attached (Appendix J).

4.14. Summary and Conclusion

The Methodology Chapter presented the researcher's epistemological position and the type of methodology he followed. The study followed a mixed methods research design. The design was to validate and expand the quantitative findings with the qualitative ones. The definition as well as the merits and demerits of the mixed methods approach were presented. Two data collection tools were used: a speech intelligibility test and a speaking task. The speech intelligibility test intended to measure the productive and perceptive intelligibility of Iraqi EFL learners, whereas the speaking, which gathered spontaneous speech from twelve Iraqi EFL learners, aimed to validate and expand on the quantitative findings. The pilot and the main study were described in terms of participants involved, the conduct of the research, the recording of speech and the type of transcription used. Several issues related to the trustworthiness of the research and the transcription process were discussed in their related sections. The approaches used to analyse the quantitative and qualitative data were explained. Ethical issues were considered and confirmations were given that the participants' identities will not be revealed.

The methodology chapter revealed several themes which were incorporated in the present study. The first theme is the reconciliation between the definition adopted for intelligibility and the measurement tools used. Being defined with reference to meaning in the present study, the measurement tools used were a speech production test using a word transcription and a speech perception test using a five-point rating scale, both emphasised capturing the pronunciation features in relation to its effect on understanding (see section 4.5.1 for details).

The second theme was related to the trustworthiness of research. The issue was related to the strategies which the researcher employed to ensure the trustworthiness of the research and its findings. At every phase of the research, I provided explanations and reasons for every aspect introduced of the research. For example, the pilot and the main study were explained in detail with reference to the participants involved, the conduct of the research, the validity and reliability and the transcription process. Also, the research materials were explained with the reasons why such materials were chosen by the researcher. This was done, for example, in the choice of the reading passage and the listening text. The third theme was related to the choices the researcher made to provide a methodology suitable for his investigation. This was done when modifying Browne's (2016) and Cruz (2003) rating scales to suit the purpose of the

present investigation. Also, a decision was made to investigate the productive and perceptive intelligibility in relation to foreign accent and accent familiarity respectively. This reflected the two aspects of intelligibility which should be developed by EFL learners who aspired for the use of English in its international context. The last theme is related to the choice of the mixed methods approach which aimed to measure quantitatively the productive and perceptive intelligibility and identify qualitatively the functional load of pronunciation errors and the communicative strategies used to overcome intelligibility failure. Having determined the methodology adopted and the type of analysis conducted, the next presents the Results and Discussion chapter of the study.

CHAPTER FIVE: RESULTS AND DISCUSSION

5.1. INTRODUCTION

This chapter presents the quantitative and qualitative findings of the study and discusses them in relation to the findings of related studies and the theoretical principles guiding the investigation. The chapter is divided into three sections. The first section introduces the quantitative results of the study. These results are based on the quantitative data derived from the speech intelligibility test, measuring the productive and perceptive intelligibility of Iraqi EFL learners. This section is divided into three subsections, one for each of the three research questions of the study. The first subsection answers research question one pertaining to the productive intelligibility of Iraqi EFL learners. It first provides an overall productive intelligibility measurement of Iraqi EFL learners. Then, it examines variations of productive intelligibility in terms of foreign accent. In this respect, foreign accent is investigated according to the three levels of segmental production difficulty postulated by Flege's (1995) Speech Learning Model. The second subsection answers research question two relating to the perceptive intelligibility of Iraqi EFL learners. This section first provides an overall measurement of perceptive intelligibility of Iraqi EFL learners. Then, it examines variations of perceptive intelligibility according to the three accent familiarity levels: matched, mismatched and unfamiliar (Bent and Bradlow, 2003). The third subsection answers research question three concerning the relationship between the productive and perceptive intelligibility of Iraqi EFL learners.

The second section qualitatively investigates the above research questions by examining intelligibility using the speech data elicited from twelve Iraqi EFL learners. The qualitative aspect of the study aims to validate the quantitative results and expand them by examining the functional loads of phonemic contrasts and the different communication strategies the Iraqi EFL learners use to overcome intelligibility problems. In this respect, the qualitative aspect of the study provides different but complementary data on the research topic.

The third section discusses the results of the study in terms of the related findings of intelligibility studies and the theoretical principles introduced earlier in the Literature Review Chapter of the study.

5.2. Quantitative Results of the Study

This section introduces the quantitative results of the study, namely the productive intelligibility results, the perceptive intelligibility results and the correlation results. To arrive at these results, the researcher uses three types of inferential statistical tests: one sample t-test⁸, one-way ANOVA and Pearson correlation R (Field, 2013; Cohen, 2007). The one sample t-test is used to measure the overall productive and perceptive intelligibility of Iraqi EFL learners to native English listeners. To examine any statistically significant differences in the productive and perceptive intelligibility scores of Iraqi EFL learners, one-way ANOVA is conducted. If significant differences are detected, a post hoc Scheffe test is used to identify where the differences occur. Pearson correlation R is used to find out if there is any relationship between productive intelligibility and perceptive intelligibility.

5.2.1. Productive intelligibility results

Research question one: To what extent is Iraqi EFL learners' speech production intelligible to native English listeners? Does foreign accent cause statistically significant variations in productive intelligibility scores?

The first part of the question investigates the overall productive intelligibility of Iraqi EFL learners. This was investigated by asking 60 Iraqi EFL learners to read a passage in English clearly. The passage was divided by the researcher into five sense units. Each sense unit received a score if all the content words were correctly articulated by the speaker in accordance with Gimson's (2001) MGI. However, the sense unit did not receive a score if one of the content words was incorrectly articulated. To measure the overall productive intelligibility, the researcher conducted a one sample t-test using IBM SPSS statistics version 25. The one sample t-test is used to compare the mean score of one group to a hypothesised population mean (Field,2013). The results related to the overall productive intelligibility of Iraqi EFL learners to native English listeners are shown in table (5.1).

⁸ There are three main types of t-test: unpaired t -test, paired t- test and one sample t-test. Unpaired t- test compares the means of two groups, paired t-test compares the means of one group at two different times and one sample t-test compares the mean of one group against a hypothesised population mean. This study uses a two-tailed one sample -test (Field,2013).

One-Sample Statistics			
N	Mean	Std. Deviation	Std. Error Mean
180	2.9169	.70899	.05284

One-Sample Test					
Test Value = 2.5					
T	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
				Lower	Upper
7.889	179	.000	.41689	.3126	.5212

Table 5. 1. The overall productive intelligibility of Iraqi EFL learners

The above statistics reveal that the mean score for Iraqi EFL learners is (2.9169) with a SD of (.70899) and the calculated t - value is (7.889), which is larger than the tabulated value of (1.960) at an alpha level of (0.05). When comparing the sample mean of (2.9169) with the hypothesised mean of (2.5), the difference is statistically significant for the sample mean: [t(179) = 7.889, p < 0.05]. Thus, Iraqi EFL learners' accented English is intelligible with a mean difference of (.41689) to native English listeners. The overall results for productive intelligibility suggest that Iraqi EFL learners can accurately produce most of the English words in accordance with Gimson's (2001) MGI pronunciation model.

To determine which aspect of the English sound system causes this significant difference, Iraqi EFL learners' productive intelligibility is measured according to each of the three levels of sound production difficulty proposed by Flege's (1995) SLM: identical phonemes, partially similar phonemes and different phonemes. This was investigated by calculating the means of the scores assigned to each of the above three levels. The results of a one sample t-test about the level of sound production difficulty experienced by Iraqi EFL learners are as follows:

a- Iraqi EFL learners' production of identical phonemes

The researcher conducted a one sample t-test using SPSS version 25. The result on the intelligibility of Iraqi EFL learners with reference to the production of identical phonemes are shown in table (5.2).

One-Sample Statistics			
N	Mean	Std. Deviation	Std. Error Mean
60	3.4252	.54588	.07047

One-Sample T-Test					
Test Value = 2.5					
T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
				Lower	Upper
13.128	59	.000	.92517	.7842	1.0662

Table 5. 2. The intelligibility of identical phonemes

The above SPSS statistics reveal that the mean score for Iraqi EFL learners' production of identical English phonemes is (3.425) with a SD of (0.545) and the calculated t - value is (13.128), which is larger than the tabulated value of (2) at the df of (59) and an alpha level of (0.05). When comparing the sample mean of (3.425) with the hypothesised population mean of (2.5), the difference is statistically significant for the sample mean: [t(59) = 13.128, p < 0.05]. Thus, Iraqi EFL learners' production of identical English phonemes is intelligible with a mean difference of (.92517). The followings are selected examples of the identical phonemes which some of the Iraqi EFL students mispronounced in the reading passage.

original words	transcriptions	mispronunciations	phoneme confusions
Feast	/fi:st/	/fɪst/ and /fest/	i: ----- ɪ, e
racing	/reɪsɪŋ/	/ri:sɪŋ/, /raɪsɪŋ/	eɪ----- ɪ:, aɪ
fields	/fi:ldz/	/feldz/	i: ----- e, ɪ
safety	/seɪftɪ/	/sæftɪ/	eɪ-----æ
wolf	/wʊlf/	/wɔ:lʃ/	u-----ɔ:

b- Iraqi EFL learners' production of partially similar phonemes

The researcher conducted a one sample t-test using SPSS version 25. The results for the intelligibility of Iraqi EFL learners' production of partially similar English phonemes are shown in table (5.3).

One-Sample Statistics			
N	Mean	Std. Deviation	Std. Error Mean
60	2.9175	.62047	.08010

One-Sample T-Test					
Test Value = 2.5					
T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
				Lower	Upper
5.212	59	.000	.41750	.2572	.5778

Table 5. 3. The intelligibility of partially similar phonemes

The above statistics reveal that the mean score for Iraqi EFL learners' production is (2.917) with a SD of (0.6204) and the calculated t-value is (5.212), which is larger than the tabulated value of (2) at the df of (59) and an alpha level of (0.05). When comparing the sample mean of (2.917) with the hypothesised population mean of (2.5), the difference is statistically significant for the sample mean: [t(59) = 5.212, p < 0.05]. Thus, Iraqi EFL learners' production is intelligible with a mean difference of (.4175). The following are selected examples of the partially similar phonemes which some of the Iraqi EFL students mispronounced in the reading passage.

original words	Transcriptions	mispronunciations	phoneme confusions
Shot	/ʃɒt/	/ʃut/	ɒ----- u
thought	/θɔ:t/	/θəʊt/	ɔ:----- əʊ
shouting	/ʃaʊtɪŋ/	/ʃu:tɪŋ/	aʊ----- u:
threaten	/θreɪn/	/θri:tɪn/	e----- i:
flocks	/flɒks/	/fla:ks/	ɒ----- a:

c- Iraqi EFL learners' production of different phonemes

The researcher conducted a one sample t-test using SPSS version 25. The results for the productive intelligibility of Iraqi EFL learners in relation to different phonemes are shown in table (5.4).

One-Sample Statistics			
N	Mean	Std. Deviation	Std. Error Mean
60	2.4080	.56212	.07257

One-Sample Test					
Test Value = 2.5					
T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
				Lower	Upper
1.268	59	.210	.09200	.2372	.0532

Table 5. 4. The intelligibility of different phonemes

The above statistics show that the mean score of Iraqi EFL learners is (2.4080) with a SD of (0.56212) and the calculated t-value is (1.268), which is smaller than the tabulated value of (2) at the df of (59) and an alpha level of (0.05). When comparing the sample mean of (2.4080) with the hypothesised population mean of (2.5), the difference is statistically significant for the hypothesised mean: [t(59) = 1.268, p > 0.05]. Thus, Iraqi EFL accented English is unintelligible with a mean difference of (.09200).

The following are selected examples of the different phonemes which some of the Iraqi EFL students mispronounced in the reading passage.

original words	Transcriptions	Mispronunciations	phoneme confusions
concern	/kɒnsɜ:n/	/kɒnsɜrɪn/	ə-----ɒ
fear	/fɪə(r)/	/fer/	v-----f
cousins	/kʌzənz/	/kɒzənz/	ɪə-----e
sheep	/ʃi:p/	/ʃi:b/	ʌ-----ɒ
			p-----b

The results for the three levels of difficulty in sound production reveal that Iraqi EFL learners vary in the means scores for each level. To determine whether these differences in mean scores for the three levels of difficulty are statistically significant, one-way ANOVA is conducted. A one-way ANOVA is used to compare the means of more than two groups. The results for the means differences of intelligibility across the three levels of difficulty are shown in table (5.5).

One-way ANOVA					
INTELLIGIBILITY					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	31.039	2	15.519	46.607	.000
Within Groups	58.938	177	0.34		
Total	89.977	179			

Table 5. 5. Production intelligibility among the three difficulty levels

The above statistics show that the calculated F-value is (46.607), which is larger than the tabulated value of (3.04) at the two df of (2 – 177) and an alpha significant level of (0.05). There are statistically significant differences among the mean scores of the three levels of difficulty: $f(2, 177) = 46.607, p < 0.05$. To indicate where these significant differences occur, a Scheffe post hoc test for multiple comparisons is conducted and the results are shown in table (5.6).

Multiple comparison		Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Identical	partially similar	.50767*	.10780	.000	.2416	.7738
	different	1.14233*	.10780	.000	.8762	1.4084
partially similar	identical	.50767*	.10780	.000	.7738	.2416
	different	.63467*	.10780	.000	.3686	.9008
Different	identical	1.14233*	.10780	.000	1.4084	.8762
	partially similar	.63467*	.10780	.000	.9008	.3686

Table 5. 6. Scheffe test among the three difficulty levels

The critical value of the Scheffe test is (0.26). When it is compared with the observed differences among the three levels of difficulty, the following results are revealed:

a. When comparing the first level of difficulty (English identical phonemes) with the second level of difficulty, the observed difference is (0.50767). When that observed difference is compared with the Scheffe critical value of (0.26), it is larger than the critical value. Thus, the observed difference is significant for the higher mean value. The mean score of the first level of difficulty is (3.425), which is larger than the mean score of the second level of difficulty,

which is (2.917). This indicates that the observed difference is significant for the first level of difficulty.

b. When comparing the first level of difficulty with the third level, the observed difference is (1.1423). When the observed difference is compared with the Scheffe critical value (0.26), it is larger than the critical value. Thus, the observed difference is significant. When comparing the mean scores, it is shown that the mean of the first level is (3.425), which is larger than the mean scores of the third level, which is (2.408). This indicates that the observed difference is significant for the first level.

c. When comparing the second level of difficulty with the third, the observed difference is (0.635). When the observed difference is compared with the Scheffe critical value (0.26), it is larger than the critical value. Thus, the observed difference is significant. When comparing the mean scores, it is shown that the mean of the second level is (2.9175), which is larger than the mean scores of the third level (2.408). This indicates that the observed difference is significant for the second level.

5.2.2. Perceptive intelligibility results

Research question two: To what extent is English speech intelligible to Iraqi EFL learners? Does accent familiarity cause statistically significant variations in perceptive intelligibility scores?

The first part of the question measures the overall perceptive intelligibility of Iraqi EFL learners. This was investigated by asking the 60 Iraqi EFL learners to listen to English speech produced by three speakers from different first language background. Then, they were requested to rate on a five-point Likert scale the amount of effort they needed to understand each speaker. The researcher conducted a one sample t-test using SPSS version 25. The results regarding the perceptive intelligibility of Iraqi EFL learners are shown in table (5.7).

One-Sample Statistics			
N	Mean	Std. Deviation	Std. Error Mean
180	2.4611	.85425	.06367

One-Sample Test					
Test Value = 2.5					
t	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
				Lower	Upper
8.464	179	.000	.53894	.6646	.4133

Table 5. 7. Overall perceptive intelligibility of Iraqi EFL learners

The above SPSS statistics show that the mean score of all Iraqi EFL learners is (2.4611) with a SD of (0.85425) and the calculated t - value is (8.464), whereas the tabulated value is (1.960) at an alpha level of (0.05) and the df of (179). When comparing the sample mean of (2.4611) with the hypothesised mean of (3), the difference is statistically significant for the hypothesised mean: $t(179)=8.464, p < 0.05$. Thus, Iraqi EFL learners can perceive and understand with little effort most of the English words produced by the three English speakers from different language backgrounds, with a mean difference of (.53894).

This overall perceptive intelligibility indicates that the three English speakers are considered as one group. To measure the perceptive intelligibility of Iraqi EFL learners to each of the three levels of accent familiarity, the researcher used a one sample t-test. The results of a one sample t-test of the perceptive intelligibility of Iraqi EFL learners are presented below.

a- Matched accent familiarity

The researcher conducted a one sample t test using SPSS version 25. The results of the perceptive intelligibility of Iraqi EFL learners in relation to matched accent familiarity are shown in table (5.8).

One-Sample Statistics			
N	Mean	Std. Deviation	Std. Error Mean
60	1.8107	.46964	.06063

One-Sample Test					
Test Value = 3					
T	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
				Lower	Upper
19.616	59	.000	1.18933	1.3107	1.0680

Table 5. 8. Matched accent familiarity

The above statistics show that the mean score of Iraqi EFL learners is (1.8107) with a SD of (0.47) and the calculated t - value is (19.616), whereas the tabulated value is (2) at the df of (59) and an alpha level of (0.05). When comparing the sample mean of (1.8107) with the hypothesised population mean of (3), the difference is statistically significant for the hypothesised mean: $t(59) = 19.616, p < 0.05$. Thus, Iraqi EFL learners need to make little effort to understand English speech produced by Iraqi EFL speakers (matched accent familiarity), with a mean difference of (1.181).

b- Mismatched accent familiarity

The researcher conducted a one sample t test using SPSS version 25. The results regarding the perceptive intelligibility of Iraqi EFL learners to an English speaker representing a mismatched accent familiarity are shown in table (5.9).

One-Sample Statistics			
N	Mean	Std. Deviation	Std. Error Mean
60	2.2552	.66728	.08615

One-Sample Test					
Test Value = 3					
t	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
				Lower	Upper
8.646	59	.000	.74483	.9172	.5725

Table 5. 9. Mismatched accent familiarity

The above statistics show that the mean score of Iraqi EFL learners' perceptive intelligibility is (2.2552) with a SD of (.66728). The calculated t - value is (8.646), whereas the tabulated value is (2) at the df of (59) and an alpha level of (0.05). When comparing the sample mean of (2.2552) with the hypothesised population mean of (3), the difference is statistically significant for the hypothesised mean: $t(59)= 8.646, p < 0.05$. Thus, Iraqi EFL learners can understand English speech produced by an English speaker, representing a mismatched accent familiarity with a mean difference of (.74483).

c- No familiarity

The researcher conducted a one sample t test using SPSS version 25. The results regarding the perceptive intelligibility of Iraqi EFL learners in relation to an unfamiliar English speaker are shown in table (5.10).

One-Sample Statistics			
N	Mean	Std. Deviation	Std. Error Mean
60	3.3173	.57380	.07408

One-Sample Test					
Test Value = 3					
T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
				Lower	Upper
4.284	59	.000	.31733	.1691	.4656

Table 5. 10. Unfamiliar English speaker

The above statistics reveal that the mean score of Iraqi EFL learners is (3.1733) with a SD of (.57380). The calculated t - value is (4.284), whereas the tabulated t value is (2) at the df of (59) and an alpha level of (0.05). When comparing the sample mean (3.1733) with the hypothesised population mean (3), the difference is statistically significant for the sample mean: $t(59)= 4.284, p < 0.05$. Thus, Iraqi EFL learners can understand an unfamiliar English speaker with a mean difference of (.31733).

To answer the second part of research question two, one-way ANOVA was used. The one-way ANOVA is used to identify whether there are statistically significant differences in the perceptive intelligibility of Iraqi EFL learners and to look for differences among the means of more than two groups. If significant differences are detected, a post hoc Scheffe test is used to identify where these differences occur. The results regarding the means differences of Iraqi EFL learners across the three English speakers are shown in table (5.11)

ANOVA					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	71.916	2	35.958	108.410	.000
Within Groups	58.709	177	.332		
Total	130.625	179			

Table 5. 11. The means differences of perceptive intelligibility

The ANOVA statistics show that the f value is (108.41), which is larger than the critical value of (3.04) at the two df of (2-177) and an alpha significant level of (0.05). There are significant differences among the mean scores of Iraqi EFL learners' perceptive intelligibility: $F(2,277) = 108.410$, $P < 0.05$. To indicate where these differences occur, a Scheffe post hoc test for multiple comparisons is conducted. The SPSS results are shown in table (5.12).

Multiple Comparisons						
Dependent Variable: degree						
Scheffe						
(I) group	(J) group	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1.00	2.00	-.44450*	.10515	.000	-.7041	-.1849
	3.00	-1.50667*	.10515	.000	-1.7662	-1.2471
2.00	1.00	.44450*	.10515	.000	.1849	.7041
	3.00	-1.06217*	.10515	.000	-1.3217	-.8026
3.00	1.00	1.50667*	.10515	.000	1.2471	1.7662
	2.00	1.06217*	.10515	.000	.8026	1.3217

*. The mean difference is significant at the 0.05 level.

Table 5. 12. Scheffe test among the three English speakers

a. When comparing the English speaker, who represents a matched accent familiarity, with the second speaker, who represents a mismatched accent familiarity, the observed difference is (0.445). When this observed difference is compared with the Scheffe critical value of (0.26), it is larger than the critical value. Thus, the observed difference is significant for the higher mean value. The mean score of the English speaker representing matched accent familiarity is (1.811), which is smaller than the mean score of the second speaker, who represents a mismatched accent familiarity (2.2552). This indicates that the observed difference is significant for the second English speaker, who represents a mismatched accent familiarity. In other words, the Iraqi EFL learners need to make more effort to understand the second speaker compared to the effort they need to understand the first speaker who represents a matched accent familiarity.

b. When comparing the first English speaker, who represents a matched accent familiarity, with the third speaker, who represents an unfamiliar accent, the observed difference is (1.507). When this observed difference is compared with the Scheffe critical value of (0.26), it is larger than the critical value. Thus, the observed difference is significant for the higher mean value. The mean score of the English speaker representing matched accent familiarity is (1.811), which is smaller than the mean score of the second speaker, who represents a mismatched accent familiarity (3.317). This indicates that the observed difference is significant for the third English speaker, who represents unfamiliar accent.

c. When comparing the second English speaker, who represents a mismatched accent familiarity, with the third speaker, who represents an unfamiliar accent, the observed difference is (1.062). When this observed difference is compared with the Scheffe critical value of (0.26), it is larger than the critical value. Thus, the observed difference is significant for the higher mean value. The mean score of the English speaker representing mismatched accent familiarity is (2.2552), which is smaller than the mean score of the second speaker, who represents a mismatched accent familiarity (3.317). This indicates that the observed difference is significant for the third English speaker, who represents unfamiliar accent.

5.2.3. Correlation results

Research question three: Is there any relationship between the productive intelligibility and the perceptive intelligibility of Iraqi EFL learners?

This was investigated by first comparing the overall means of productive and perceptive intelligibility of Iraqi EFL learners to arrive at an overall correlation result. To arrive at the correlation between each of the levels of foreign accent and accent familiarity, the Pearson correlation R is also used. The overall correlation results about the productive and perceptive intelligibility of Iraqi EFL learners are as follows:

Descriptive Statistics			
	Mean	Std. Deviation	N
overall production intelligibility	2.9169	.70899	180
overall perceptive intelligibility	2.4611	.85425	180

Correlations			
		overall production intelligibility	overall perceptive intelligibility
overall production intelligibility	Pearson Correlation	1	.701**
	Sig. (2-tailed)		.000
	N	180	180
overall perceptive intelligibility	Pearson Correlation	.701**	1
	Sig. (2-tailed)	.000	
	N	180	180

** . Correlation is significant at the 0.01 level (2-tailed).

Table 5. 13. Correlation between productive and perceptive intelligibility

The above table shows that the mean score for productive intelligibility is (2.917) with a SD of (0.709), whereas the mean score for perceptive intelligibility is (2.461) with a SD of (0.854). The calculated R-value is (0.701), which is larger than the tabulated r value of (0.113). Thus, there is a strong positive correlation between productive and perceptive intelligibility. The researcher also examined the correlation between the levels of difficulty in productive intelligibility and the three levels of accent familiarity as shown below:

1. Correlation between identical phonemes and matched accent familiarity.

Descriptive Statistics			
	Mean	Std. Deviation	N
identical phonemes	3.4252	.54588	60
matched accent	1.8147	.46753	119

Correlations			
		identical phonemes	matched accent
identical phonemes	Pearson Correlation	1	-.833**
	Sig. (2-tailed)		.000
	N	60	60
matched accent	Pearson Correlation	-.833**	1
	Sig. (2-tailed)	.000	
	N	60	119

** . Correlation is significant at the 0.01 level (2-tailed).

Table 5. 14. Identical phonemes and matched accent

The above statistics show that the mean score of Iraqi EFL learners' production of identical English phonemes is (3.4252) with a SD of (0.546), whereas the mean score of Iraqi EFL learners' perceptive intelligibility to matched accent familiarity is (1.8107) with a SD of (0.469). The calculated R-value is (0.833), which is larger than the tabulated R-value of (0.169). This indicates a significant difference at an alpha level of (0.05). When comparing the mean scores of identical phonemes and matched accent familiarity, it is revealed that the mean score of identical English phonemes is larger than the mean score of matched accent familiarity. Thus, the result is significant for the mean score of identical English phonemes.

2. Correlation between partially similar phoneme and mismatched accent familiarity.

Descriptive Statistics			
	Mean	Std. Deviation	N
partially similar phonemes	.9175	.62047	60
Mismatched	.2552	.66728	60

Correlations			
		partially similar phonemes	mismatched
partially similar phonemes	Pearson Correlation	1	.719**
	Sig. (2-tailed)		.000
	N	60	60
Mismatched	Pearson Correlation	-.719**	1
	Sig. (2-tailed)	.000	
	N	60	60

** . Correlation is significant at the 0.01 level (2-tailed).

Table 5. 15. Partially similar phoneme and mismatched accent

The above statistics show that the mean score of Iraqi EFL learners' production of partially similar English phonemes is (2.9175) with a SD of (0.620), whereas the mean score of Iraqi EFL learners' perceptive intelligibility to mismatched accent familiarity is (2.2552) with a SD of (0.667). The calculated R-value is (0.719), which is larger than the tabulated R-value of (0.169). This indicates a significant difference at an alpha level of (0.05). When comparing the mean scores of partially similar phonemes and mismatched accent familiarity, it is revealed that the mean score of partially similar English phonemes is larger than the mean score of mismatched accent familiarity. Thus, the result is significant for the mean score of partially similar English phonemes.

3. Correlation between different phonemes and unfamiliar accent

Descriptive Statistics			
	Mean	Std. Deviation	N
different phonemes	2.4080	.56212	60
unfamiliar accent	3.3173	.57380	60

Correlations			
		different phonemes	unfamiliar accent
different phonemes	Pearson Correlation	1	.011
	Sig. (2-tailed)		.931
	N	60	60
unfamiliar accent	Pearson Correlation	.011	1
	Sig. (2-tailed)	.931	
	N	60	60

Table 5. 16. Different phonemes and unfamiliar accent

The above statistics show that the mean score of Iraqi EFL learners' production of different English phonemes is (2.4080) with a SD of (0.562), whereas the mean score of Iraqi EFL learners' perceptive intelligibility to unfamiliar accent is (3.3173) with a SD of (0.573). The calculated R-value is (0.011), which is smaller than the tabulated R-value of (0.169). This indicates a non-significant difference at an alpha level of (0.05).

5.2.4. Summary of the Quantitative Results

The above findings on the productive and perceptive intelligibility of Iraqi EFL learners are grouped into three general headings: productive intelligibility findings, perceptive intelligibility findings and correlation findings.

At the productive intelligibility level, the overall finding reveal that Iraqi EFL learners' speech production is intelligible [$t(179)=7.889$, $p < 0.05$ with a mean difference of (.41689)]. When examining the overall productive intelligibility in relation to the three levels of sound difficulty in a foreign accent, the following results are revealed. First, Iraqi EFL learners can accurately produce the English words and utterances which contain English segmental phonemes identical

to those found in the sound system of Iraqi Arabic [$t(59) = 13.128, p < 0.05$]. Second, the spoken utterances which contain English segmental phonemes partially similar to those found in Iraqi Arabic are also accurately produced by Iraqi EFL learners [$t(59) = 5.212, p < 0.05$]. Third, most of the spoken utterances which contain English segmental phonemes different from those found in the sound system of Iraqi Arabic have been unintelligible [$t(59) = 1.268, p > 0.05$].

At the perceptive intelligibility level, the overall findings show that Iraqi EFL learners can understand with varying degrees of efforts the utterances produced by the three English speakers from different first language backgrounds [$t(179)=8.464, p < 0.05$]. When examining the overall perceptive intelligibility of Iraqi EFL learners across the three levels of accent familiarity, namely matched, mismatched and unfamiliar, the following results are revealed. First, Iraqi EFL learners can understand with little effort much of what has been said by the Iraqi EFL speakers [$t(59)=19.616, p < 0.05$], representing matched accent familiarity. Second, Iraqi EFL learners can understand most of what is said by the British English speaker [$t(59)= 8.646, p < 0.05$], representing mismatched accent familiarity. Third, the Iraqi EFL learners struggle to understand what is said by the Chinese English speaker [$t(59)= 4.284, p < 0.05$], representing unfamiliar accent to the Iraqi EFL learners. Although there is an overall strong positive correlation between the productive and perceptive intelligibility of Iraqi EFL learners (0.701), the correlation results vary with respect to foreign accent and accent familiarity. These findings are summarised in table 5.17 below.

1. Productive intelligibility findings
a. Iraqi EFL learners' speech production is intelligible: [$t(179) = 7.889, p < 0.05$] with a mean difference of (.41689).
b. Iraqi EFL learners' production of identical English phonemes is intelligible: [$t(59) = 13.128, p < 0.05$] with a mean difference of (.92517).
c. Iraqi EFL learners' production of partially similar phonemes is intelligible: [$t(59) = 5.212, p < 0.05$] with a mean difference of (.4175).
d. Iraqi EFL learners' production of different phonemes is unintelligible: [$t(59) = 1.268, p > 0.05$] with a mean difference of (.09200).
e. There are statistically significant differences among the mean scores of the three levels of difficulty in the above speech sound production: [$f(2,177)= 46.607, p < 0.05$].

2. Perceptive intelligibility findings
a. Overall, Iraqi EFL learners can understand the English speech produced by the three English speakers from different first language backgrounds: $t(179) = 8.464$, $p < 0.05$ with a mean difference of (.53894).
b. Iraqi EFL learners can understand with little effort the English speech produced by the Iraqi EFL speaker representing matched accent: $[t(59) = 19.616, p < 0.05]$ with a mean difference (1.181).
c. Iraqi EFL learners can understand with some effort the English speech produced by the British English speaker representing mismatched accent: $[t(59) = 8.646, p < 0.05]$ with a mean difference of (.74483).
d. The English speech produced by the Chinese speaker representing unfamiliar was responsible for the perceptive intelligibility failures of Iraqi EFL learners $[t(59) = 4.284, p < 0.05]$.
e. There are statistically significant differences among the mean scores of the three levels of accent familiarity: $[f(2,277) = 108.410, p < 0.05]$.
3. Correlation findings
a. The more Iraqi EFL learners' speech production is intelligible, the less effort they need to make to understand English speech, with the R - value of (0.701).
b. The more identical English phonemes an utterance contains, the less effort listeners need to make to understand it, with the R – value of (0.833).
c. The more partially similar phonemes an utterance contains, the less effort listeners need to make to understand it, with the R-value of (0.719).
d. The more different English phonemes an utterance contains, the more effort listeners need to make to understand it, with the R-value of (0.011).

Table 5. 17. Summary of quantitative findings

5.3. Qualitative Results of the Study

The results of the qualitative analysis are grouped into two major categories: functional load (FL) of phonemic contrasts and communication strategies CSs. These two categories include other related subcategories. The overall purpose of identifying these categories is to validate and expand the quantitative findings. For this purpose, an analytical framework is followed to present the data as a smooth narrative. Regarding the validation of the quantitative findings, the content categories identified in the speech samples were grouped into one central category of FL. This central category then includes two other subcategories: low functional load and high functional load. These content categories are based on a comparison between the segmental phonemic contrasts produced by Iraqi EFL learners and Brown's (1988) list of functional loads. With respect to the expansion of the quantitative categories, the content categories identified are put into one central category of communication strategy. This central category includes other subcategories. In the next sections, the qualitative findings related to the FL of phonemic contrasts are presented first followed by the qualitative findings related to the use of communication strategies.

5.3.1. The Functional load of phonemic contrasts

There are two benefits for adopting the functional load approach in the qualitative aspect of the study. First, the quantitative results are triangulated by considering the communicative values of phonemic contrasts rather than frequency counts. This is done by comparing the segmental phonemic contrasts produced by the twelve Iraqi speakers to their functional loads as determined by Brown's (1988) list. Second, the identification of high and low functional load segmental errors causing intelligibility failures can be introduced into Iraqi EFL classrooms. It has been confirmed by related studies that foreign accented English is intelligible as long as these phonemic oppositions are identified and prioritised (Brown, 1988; Gimson, 2001; Cruttenden, 2014; Munro and Derwing, 2006; King, 1967). To identify these segmental phonemic deviations, the researcher followed Brown's (1988:603) three-part analysis of phonemic contrasts: identifying, categorising and prioritising.

1. Identifying the phonemic deviations

The segmental phonemic deviations in the speech of the twelve Iraqi EFL speakers are auditorily identified by the researcher to determine the various interlanguage variants produced by the Iraqi speakers. For example, the utterance *I love painting very much* found in the speech of one of the twelve Iraqi speakers is transcribed as /aɪ lʌv peɪntɪŋ veri mʌʃ/. This transcription is compared with the speakers' actual pronunciation of the utterance. After that, the segmental phonemic deviations are identified along with their interlanguage variants.

2. Categorising the phonemic deviations

These segmental phonemic contrasts and their interlanguage variants are compared with Brown's (1988) list to determine their functional loads, whether high or low. High functional load errors refer to those types of errors which have a higher influence on listeners' understanding when compared with low functional load errors. In Brown's (1988) article, these types of errors are presented on a ranking scale from 10 to 1, with 10 being the most important and 1 the least.

3. Prioritising the phonemic deviations

All the segmental phonemic contrasts produced by Iraqi EFL learners are selected and arranged hierarchically following Brown's (1988) list of segmental phonemes. Then, the high functional load contrasts are recommended to be introduced first into Iraqi EFL pronunciation classes. The following data analysis aims to identify the functional loads of phonemic contrasts in vowels (monophthongs and diphthongs) and in consonants.

5.3.1.1. Functional load in monophthongs

A monophthong, or a pure vowel, is produced with no change in quality. In English, there are twelve monophthongs /ɪ, i:, e, ə, ɜ:, æ, ʌ, a:, ɒ, ɔ:, ʊ, u:/. Five of these vowels have a markedly longer duration than the remaining seven vowels. The followings are the results related to the functional loads of phonemic contrasts found in Iraqi EFL learners' speech.

1./ɪ/ and its functional load.

This is a short high front unrounded English vowel. Data analysis of the speech samples produced by the 12 Iraqi EFL learners reveals that the vowel phoneme /ɪ/ is confused with /i:,e/. As far as the vowel confusion of /ɪ/ and /i:/ is concerned, it was detected in the word live /lɪv/ mispronounced as /li:v/ by Speaker 1 in the utterance *I was born in Baghdad and I live in it*, in the word trip mispronounced as /tri:p/ by Speaker 11 in the utterance *We went on a trip to Nisan province* and in the word kid mispronounced as /ki:d/ by Speaker 8 in the utterance *I am married and have one kid*. Similarly, the vowel confusion between /ɪ and e/ is detected in the word bit mispronounced as /bet/ by Speaker 8 in the utterance *I want to talk a little bit*.

The above interlanguage variants of the monophthong /ɪ/ are considered phonemic in the sense that their mispronunciations affect the quantity and quality of the vowel /ɪ/. To establish the functional load of these vowel confusions, the researcher compares them to the list of high and low functional load phonemes proposed by Brown (1988). The results reveal that the two vowel contrasts are found to be high functional load phonemic contrasts. This means that these contrasts are of great communicative value and their mispronunciations will greatly affect listeners' understanding.

Two major issues need to be clarified in relation to this and other points related to establishing the functional load of phonemic contrasts made by Iraqi EFL learners. The first issue is related to the type of analysis adopted. In this study, I adopted a deductive qualitative content analysis. The analysis was used to categorise the pronunciation errors committed by the 12 Iraqi EFL speakers into low and high functional loads based on Brown's (1988) table of English segmental phonemic contrasts. In other words, the pronunciation errors made by the Iraqi speakers were compared to the high and low phonemic contrasts established by Brown (1988). Based on this categorisation of errors, a suggested list of high functional load phonemes was proposed as important for the productive and perceptive intelligibility of Iraqi EFL learners. In this type of analysis, a phonemic confusion is categorised as of high functional load even if it is mispronounced by only one speaker. This categorisation of errors based on already established categories determines the functional load of pronunciation errors rather than their frequency counts. In spite of this, I have provided multiple examples of the pronunciation errors made by the 12 Iraqi speakers in this section. The second issue is related to the nature of the spoken data elicited by the speaking task. Here, the spoken data were different from one

speaker to another. different from one speaker to another. The speakers were requested to talk on a topic of their own choice or choose one from a suggested list of topics in front of them. This entailed that the words delivered were specific to a particular speaker.

2./ i:/ and its functional load

This is a long high front unrounded English vowel. Data analysis shows no serious confusions regarding this vowel sound. In one instance, the sound is confused with the diphthong /eɪ/. For example, the word increase /ɪnkri:s/ is mispronounced as /ɪnkreis/ by Speaker 5 in the utterance *increase your knowledge*. This interlanguage variant of the monophthong /i:/ is considered phonemic since a change of vowel occurs. The mispronunciation affects the category of the vowel /i:/, altering it from a monophthong to a diphthong. When further comparing the vowel contrast /i:,eɪ/ to the same contrast found in Brown's (1988) table, the vowel contrast is found to be of low functional load. This means that this vowel confusion is of less communicative value and its mispronunciation does not cause serious misunderstanding.

3./e/ and its functional load

This is a short mid front unrounded vowel. Data analysis shows that the vowel is confused with /ɪ/. For example, the word memory /meməri / is mispronounced as /miməri/ by Speaker 11 in the utterance *Regardless of all memories*. The same confusion is also detected in the word websites mispronounced as /wɪbsaɪts/ by Speaker 12 in the utterance *some websites like Facebook* and in the words well and lesson mispronounced as /wɪl/ and /lɪsɪn/ by Speaker 3 in the utterances *develop my English well* and *I attend every lesson*. The interlanguage variant of the monophthong /e/ is considered phonemic. The vowel change affects the quality of the vowel /e/. When further comparing this vowel contrast to the same contrast in Brown's (1988) table, the vowel contrast is of low functional load. This means that this vowel confusion is of less communicative value and its mispronunciation does not cause serious misunderstanding.

4. /æ/ and its functional load

This is between a half close and open front short unrounded vowel. Iraqi EFL speakers confuse this vowel with its long counterpart /a:/. For example, the word travel is mispronounced as

/tra:vɪl/ by Speaker 11 in the utterance *I love to travel*, the word language is mispronounced as /la:ŋgwədʒ/ by Speaker 1 in the utterance *develop my skills in learning English language* and the word family is mispronounced as /fa:mɪli/ by Speaker 6 in the utterance *She was with her family*. In all the above instances, the vowel change is considered phonemic. The change affects the quantity of the vowel. When further comparing this vowel contrast to the same contrast in Brown's (1988) table, the vowel contrast is of low functional load. This means that this vowel confusion is of less communicative value and its mispronunciation does not cause serious misunderstanding.

5./a:/ and its functional load

This is a long low front unrounded vowel. Data analysis reveals no serious confusion of this vowel. On the contrary, Iraqi EFL speakers use this vowel sound when they have trouble pronouncing some other English vowels such as /æ/.

6. /ɒ / and its functional load

This is a short low back rounded vowel. Iraqi EFL learners confuse it with /ʊ, ʌ and ɔ:/. For example, the word locked /lɒkt / is mispronounced as /lukt / by Speaker 7 in the utterance *doors were not locked*. Similarly, the word college /kɒlɪdʒ/ is mispronounced as /kʌlɪdʒ/ by Speaker 6 in the utterance *She went to a different college*. The same is true for the word offer which is mispronounced as /ɔ:fər /. These vowel confusions are all phonemic. The change affects the quantity and quality of the vowel. When further comparing these vowel confusions to the same vowel contrasts in Brown's (1988) table, the vowel contrasts /ɒ and ɔ:/ and / ɒ and ʌ/ are found to be of high functional load. By contrast, the vowel contrast /ɒ and u/ is found to be of low functional load. Based on their functional load, the vowel contrasts /ɒ and ɔ:/ and / ɒ and ʌ/ are considered to be of high communicative value. Hence, these vowel contrasts if detected in EFL learners' speech will affect listeners' understanding. Whereas, the vowel contrast /ɒ and u/ is considered of less communicative value. Hence, this vowel contrast if detected in EFL learners' speech will not greatly affect listeners' understanding.

7./ɔ:/ and its functional load

This is a long low back rounded vowel. Data analysis shows no serious confusion of this vowel. On the contrary, Iraqi EFL speakers use this vowel sound when they have trouble pronouncing some English words with the short vowel /ɒ/.

8./u/ and its functional load

This is a short high back rounded vowel. Iraqi EFL learners confuse it with /ɔ:/. For example, the word good is mispronounced as /gɔ:d/ by Speaker 9 in the utterance *A good friend will not be afraid*. The same confusion was detected in the word books mispronounced /bɔ:ks/ as by Speaker 12 in the utterance *read books for knowledge*. When further comparing the vowel contrast to the same one in Brown's (1988) table, the vowel contrast /u, ɔ:/ is found to be of high functional load. Thus, the former contrasts are of great communicative value and mispronouncing them affects listeners' understanding. Whereas the latter vowel contrast is of less communicative value and its mispronunciation does not affect listeners' understanding.

9. /u:/ and its functional load

This is a long high back rounded vowel. Iraqi EFL speakers confuse it with /ɔ:/ or /u/. For example, the word tool /tu:l/ is mispronounced as /tɔ:l/ by Speaker 7 in the utterance *It includes many tools*. The same holds true for the word group which is mispronounced as /grɔ:p/ by Speaker 6 in the utterance *do the Facebook group*. The change of vowels affects both the quantity and quality. When further comparing these vowel confusions to the same contrasts in Brown's (1988) table, the vowel contrasts /u: u / and / u: ɔ: / are found to be of low functional load. Thus, these contrasts are of less communicative value and their mispronunciations do not greatly affect listeners' understanding.

10./ʌ/ and its functional load

This is a short mid central unrounded vowel. Iraqi EFL learners confuse it with /ɒ/. For example, the word luck /ʌk / is mispronounced as /ʌk / by Speaker 6 in the utterance *wish you good luck*. Similarly, the word cook /kuk/ is mispronounced as /kɒk/ in *They cook good food*. The same is true for the words love and nothing mispronounced as /ʌv/ and /nʌθɪŋ/ by

Speaker 4 in the utterances *I also love reading* and *do nothing else*. When further comparing this vowel contrast to the same contrast in Brown's (1988) table, the vowel contrast is of high functional load. This means that the vowel confusion is of high communicative value and its mispronunciation greatly affects listeners' understanding.

11./ɜ:/ and its functional load

This is a long mid central unrounded vowel. Iraqi EFL learners confuse it with /ɔ:/ or /e/. For example, the word work /wɜ:k/ is mispronounced as /wɔ:rk/ by Speaker 10 in the utterance *I am divided between work or study*. Similarly, the word world /wɜ:ld/ is mispronounced as /wɔ:rild/ by Speaker 11 in the utterance *I see the world*. Other confusions by the same speaker were found in the word birds which is produced as /berdz/ in the utterance *animals in all the roads like cows, birds*. When further comparing these vowel confusions to the same vowel contrasts in Brown's (1988) table, the vowel contrast /ɜ: ɔ:/ is found to be of high functional load. By contrast, the vowel contrasts /ɜ:, e/ is found to be of low functional load. Thus, the former contrast is of great communicative value and mispronouncing it affects listeners' understanding. Whereas, the latter vowel contrast is of less communicative value and its mispronunciation does not affect listeners' understanding.

12./ə/ and its functional load

This is a short mid central unrounded vowel. Iraqi EFL learners confuse it with /u, æ/. For example, the word together /təgeðə(r)/ is mispronounced as /tugeðə(r)/ by Speaker 2 in the utterance *in went to Al Mansur Mall together*. Similarly, the word ability /əbɪləti/ is mispronounced as /æbɪləti/ by Speaker 10 in the utterance *in the ability to do better*. When further comparing these vowel confusions to the same contrasts in Brown's (1988) table, the vowel contrasts /ə u/ and /ə æ/ are found to be of low functional load. Thus, these contrasts are of less communicative value and their mispronunciations do not greatly affect listeners' understanding.

5.3.1.2. Functional load in diphthongs

A diphthong refers to a vowel sound produced with a change of quality, a movement from one vowel position to another. In English, there are eight diphthongs (/aɪ/, /aʊ/, /ɔɪ/, /eə/, /eɪ/, /əʊ/, /ɪə/, /ʊə/). The following is a detailed analysis of each diphthong along with its FL. This analysis is based on the phonemic deviations produced by the twelve Iraqi EFL speakers.

1./eɪ/ and its functional load

Iraqi EFL learners confuse this diphthong with /e/. For example, the word lake /leɪk/ is mispronounced as /lek/ by Speaker 11 in the utterance in *We went to the lake*. Similarly, the word daily /deɪli/ is mispronounced as /deli/ by Speaker 10 in the utterance *I go to school daily*. When further comparing the vowel contrast /eɪ, e/ to the same contrast in Brown's (1988) table, the vowel contrast is of high functional load. This means that this vowel confusion is of high communicative value and its mispronunciation can cause serious misunderstanding.

2./əʊ/ and its functional load

Iraqi EFL learners confuse this diphthong with /ɔ:/. For example, the word older /əʊldə/ is mispronounced as /ɔ:dər/ by Speaker 9 in the utterance *He was older than me*. Similarly, the word boat /bəʊt/ is mispronounced as /bɔ:t/ by Speaker 11 in the utterance *We took the boat*. The same confusion is detected in words like motor mispronounced as /mɔ:tɔ:r/ by Speaker 7 in the utterance *little experience in car motor* and the word role mispronounced as /rɔ:l/ by Speaker 8 in the utterance *The role of the parents*. When further comparing the vowel contrast /əʊ, ɔ:/ to the same contrast in Brown's (1988) table, the vowel contrast is of high functional load. This means that this vowel confusion is of high communicative value and its mispronunciation can cause serious misunderstanding.

3./aɪ/ and its functional load

Iraqi EFL learners confuse this diphthong with /eɪ/. In one instance, the word buy /baɪ/ is mispronounced as /beɪ/ by Speaker 2 in the utterance *We buy many things*. When further comparing the vowel confusion of /aɪ, eɪ/ to the same contrast in Brown's (1988) table, the

vowel contrast is of low functional load. This means that it is of less communicative value and it will not greatly affect listeners' understanding.

4./au/ and its functional load

Iraqi EFL learners confuse this diphthong with /əʊ/. In one instance, the word clouds /klaʊdz/ is mispronounced as /kləʊdz/ by Speaker 11 in the utterance *We enjoyed the clouds*. When further comparing the vowel confusion of /au, əʊ/ to the same contrast in Brown's (1988) table, the vowel contrast is of low functional load. This means that it is of less communicative value and it will not greatly affect listeners' understanding.

5./ɔɪ/ and its functional load

Data analysis shows no serious confusions regarding this diphthong.

6./ɪə / and its functional load

Iraqi EFL learners confuse this diphthong with /i:/. For example, the word weird /wɪəd / is mispronounced as /wi:rd/ by Speaker 7 in the utterance *Something weird today*. Al, the word weird /wɪəd / is mispronounced as /wi:rd/ by Speaker 7 in the utterance *Something weird today*. When further comparing the vowel confusion of /ɪə, i:/ to the same contrast in Brown's (1988) table, the vowel contrast is of low functional load. This means that it is of less communicative value and it will not greatly affect listeners' understanding.

7. /eə / and its functional load

Iraqi EFL learners confuse this diphthong with /e/. For example, the word chair /tʃeə/ is pronounced as /tʃer/ by Speaker 4 in the utterance *sometimes sit on my chair* and the word rare /reə(r)/ is pronounced as /rer/ by Speaker 9 in the utterance *rare and hard to find nowadays*. When further comparing the vowel confusion of /eə e/ to the same contrast in Brown's (1988) table, the vowel contrast is of low functional load. This means that it is of less communicative value and it will not greatly affect listeners' understanding.

8./uə/ and its functional load

Iraqi EFL learners confuse this diphthong with /u:/. In one instance, the word poor /puə/ is mispronounced as /pu:r/ by Speaker 11 in the utterance *Stop killing poor animals*. When further comparing the vowel confusion of /uə, u:/ to the same contrast in Brown's (1988) table, the vowel contrast is of low functional load. This means that it is of less communicative value and it will not greatly affect listeners' understanding.

5.3.1.3. Functional load in consonants

Consonants are sounds produced with an obstruction in the air passage. Analysis of Iraqi EFL learners' speech data shows that the consonants /p, v and ʒ/ are responsible for most Iraqi EFL learners' intelligibility failures.

1. / p / and its functional load

This is a bilabial voiceless stop consonant. Iraqi EFL speakers confuse this vowel with /b/ in words like develop produced as /divelob/ by Speaker 10 and the word people produced as by /pi:bil/ by Speaker 1 in the utterances *a lot of people* and *develop my language*. When further comparing the consonant contrast /p b/ to the same contrast in Brown's (1988) table, the contrast is of high functional load. This means that this consonant confusion is of high communicative value and its mispronunciation can cause serious misunderstanding.

2. /v/ and its functional load

This is a labiodental voiced fricative consonant. Iraqi EFL learners confuse it with /f/ in words like improve and moved. For example, the word improve /impru:v/ is mispronounced as /impru:f/ by speaker 1 in the utterance *improve themselves in English*. Similarly, the word moved is mispronounced as /mu:fid/ by Speaker 11 in the utterance *We moved from one place to another* When further comparing the consonant contrast /v f/ to the same contrast in Brown's (1988) table, the contrast is of high functional load. This means that this consonant confusion is of high communicative value and its mispronunciation can cause serious misunderstanding.

3. /ʒ/ and its functional load

This is a palatal voiced fricative consonant. Iraqi EFL learners confuse it with /ʃ/ in words like pleasure, and television. For example, the word television is mispronounced as /televiʃin/ by Speaker 8 in the utterance *technology like the internet and television*. Similarly, the word pleasure is mispronounced as /pleʃer/ by Speaker 12 in the utterance *good material and pleasure*. When further comparing the consonant contrast /ʒ ʃ/ to the same contrast in Brown's (1988) table, the contrast is of low communicative value and its mispronunciation will not greatly affect the listeners' understanding.

The above vowel contrasts produced by Iraqi EFL speakers are summarised in table (5.18) below

	Phonemic deviations in vowels																			
	i:	ɪ	e	æ	a:	ʌ	ə	ɜ:	ɒ	ɔ:	u	u:	eɪ	aɪ	ɔɪ	oʊ	aʊ	ɪə	eə	uə
i:													+							
ɪ	+		+																	
E		+																		
æ					+															
a:																				
ʌ									+											
ə				+							+									
ɜ:	+		+							+										
ɒ						+				+	-+									
ɔ:																				
ʊ									+											
u:										+	+									
eɪ			+																	
aɪ																	+			
ɔɪ																				
aʊ																				
əʊ										+										
ɪə	+																			
eə			+																	
uə											+									

Table 5. 18. Phonemic deviations in English vowels.

The functional loads of these phonemic contrasts (vowels and consonants) are summarised in the following table (5.19). They are arranged hierarchically in terms of maintaining communication, following Brown's (1988) list of high and low FL contrasts.

N	Vowels	Consonants
10	/ɒ, ʌ/	/p/,/b/
9	/ɪ/, /e/ /eɪ/, /e/	
8	/ɪ/, /i:/	
7		/v/, /f/
6	/ɜ:/, /ɔ:/ /əʊ/, /ɔ:/	
5	ɒ, ɔ:	
4	/æ/, /a:/ /ɒ/, /u/ /ɜ:/, /e/ /eə/, /e/	
3	/ɪə/, /i:/	
2		/ʒ/, /ʃ/
1	/u/, /ɒ/ /u:/, /ɒ/ /ə/, /u/ /ə/, /æ/ /aɪ/, /eɪ/ /aʊ/, /əʊ/ /uə/, /u:/	/ʒ/, /dʒ/

Table 5. 19. Functional loads of English phonemic contrasts

5.3.2. Communication strategies

In this section, the qualitative analysis aims to build upon the quantitative findings by further exploring the facilitating techniques used by the Iraqi EFL learners, namely communication strategies. It has been shown that accent familiarity, as a facilitating factor, can help listeners recognise and understand familiar accents more than unfamiliar ones. Along this line of thought, the researcher further suggests that Iraqi EFL speakers use different communication strategies (CS) to overcome pronunciation problems and deliver their message successfully. In the present study, the identification of CS is restricted to pronunciation rather than lexical causes at the speech production level. The following is an account of the communication strategies used by the twelve Iraqi EFL speakers.

1. The let it pass strategy

The ‘let it pass strategy’ is first introduced by Firth to describe a strategy that the speaker and/or hearer adopts when facing problems in speech and “lets the unknown or unclear action, word or utterance pass on the (common-sense) assumption that it will either become clear or redundant as talk progresses” (1996:243). The effect of this strategy can lead to speakers ignoring the problematic utterance/word altogether and to abandoning the topic or point being discussed. One may argue that the let it pass strategy is not a true strategy because the speaker may not notice that he has made an error. In response to this, the definition of the strategy, given above, makes it clear that the speaker faces a problem then reacts accordingly. In a lexical approach to communication strategies, the speaker may not notice that he has selected a wrong lexical item. Therefore, this type of strategy may not apply. However, a pronunciation-based approach to communication strategies means that the pronunciation problems will be so evident to the speaker to overlook at the articulatory, acoustic and auditory levels. It is, then, the choice of the speaker to decide on the type of strategy he will use. The twelve Iraqi EFL speakers, used in the speaking task, are 3rd year university students who studied English phonetics at the 1st and 2nd year of their academic study. These students are aware of their pronunciation problems.

The let it pass strategy is frequently observed in the speech of two of the twelve Iraqi EFL learners, Speaker 1 and Speaker 2. Although the speech samples produced by these speakers contained several pronunciation errors, they simply let them pass. As has already been shown

by the qualitative analysis of sound confusions, some of these mispronounced words contained high functional load pronunciation which are responsible for maintaining meaning in communication. In the speech produced by Speaker 1, several words were mispronounced. For example, the word watch was mispronounced as /wɒʃ/, luck was mispronounced as /lɒk /, colleague as /kɒlɪdʒ /. These mispronunciations resulted in new different words with lexical changes. The following is an example of the speech produced by Speaker 1 with the mispronounced words underlined.

I am citizen. I live in Iraq, Baghdad. I wish to serve my country and develop my skills in learning English language. A lot of people ask me how to improve themselves in English. So, I advise them to watch /wɒʃ/ movies in English. I advise them to listen a lot. I also encourage them to speak with their colleagues /kɒlɪdʒ /. and to read in English. At the end, I wish luck /lɒk /to my friends.

In the above example, the speaker confuses the phoneme /ʌ/ with /ɒ/. This confusion is due to the absence of the phoneme /ʌ/ in Iraqi Arabic. Also, Brown (1988) states that this phonemic contrast is important because it distinguishes many lexical words in English. The researcher examined what the speaker did when this high functional load phonemic contrast was made. In other words, what communication strategies did Sadiq use to overcome his pronunciation problem? By examining the speech, in this particular instance, the researcher concluded that speaker 1 did not pay any attention to his mispronunciations. He simply let them pass. This could be interpreted in that the meaning might be clarified as the speech continued.

Similarly, Speaker 2 used the let it pass strategy in his speech, especially when he faced problems pronouncing the words park as /bɑ:k/, audience as /ɔ:dmi:s/ and buy as /beɪ/. The following is an example of the speech produced by speaker 2 with the mispronounced words underlined.

Last week I had a nice day with my friend. First, we had a small picnic in the park. Then, we went to Al Mansur Mall. We buy many things from the mall. We bought clothes and ate our lunch. I also played some games like Discovery which I like it very much. After that we decided to watch a football match. I like the way the audience expressed their joy by singing and dancing.

In the above example, the underlined mispronunciations resulted in either different words or non-existing English words. One may argue that the correct forms of the words can be deduced from the context. For example, the word audience can be inferred by the presence of a lexical

item like football, due to the co-text effect (Jenkins, 2000) or lexical anticipation (Kirkpatrick, 2007). Although the present researcher does not deny the effect of context on speech intelligibility, he is more interested in this part of analysis in whether the speakers used or did not use CS when facing problems at the speech production level.

Speaker 2 confuses the phoneme /p/ with /b/. This confusion is due to the absence of the phoneme /p/ in Iraqi Arabic. Also, Brown (1988) states that this phonemic contrast is important because it distinguishes many lexical words in English. The researcher examined what the speaker did when this high functional load phonemic contrast was made. In other words, what communication strategies did Speaker 2 use to overcome pronunciation problem? By examining the speech, in this particular instance, the researcher concluded that the speaker used the let it pass strategy.

2. The repetition Strategy

The speaker notices a problem in his pronunciation and decides to repeat the problematic pronunciation (Kirkpatrick 2007:125). The strategy of repetition was observed in the speech of Iraqi EFL speakers. However, there were some differences in its use. Data analysis revealed two issues concerning this phonological adjustment of mispronounced words. The first one was when the speaker repeated the mispronounced word but the mispronunciation was still unresolved. This incident indicated a deficiency in the speakers' phonological competence. Or, the problematic word contained a phoneme which does not have its counterpart in Iraqi Arabic. For example, the mispronunciations of the words sixth, materials and enter were repeated by Speaker 3. However, the same mispronunciations were still heard. The following is an example of the speech produced by Speaker 3.

When I was in the sixth class. I loved to study English very much. I wanted to enter this department. I watched lots of movies and tried to translate without even looking at the writings. I tried hard to develop my English and my listening skills. Also, I wanted to enter the English department because there are many opportunities. After I graduate, I want to be a teacher and learn many things and know how to put the materials in their right place.

In the above example, different pronunciation causes lead to the above mispronunciations. The word sixth contains a final four-element consonant cluster which is not permitted in Iraqi

Arabic. Mahud (1998) states that Modern Arabic allows two-element consonant clusters finally and in pause positions only. In the word enter, Speaker 3 confuses the phoneme / e / with /ɪ/. This confusion is due to the absence of the phoneme /e/ in Iraqi Arabic. Also, Brown (1988) states that this phonemic contrast is important because it distinguishes many lexical words in English. The same justification can be applied to the word materials, which includes different phonemes.

The same unsuccessful use of the repetition strategy was observed in the speech produced by Speaker 4. Speaker 4 repeated pronunciation of the word drawing. She substituted the vowel /ɔ:/ with /au/. The following is an example from the speech produced by Speaker 4

My favourite hobby is painting. I love painting very much. I find it fun and comfortable. I like drawings since I was a child. I used to spend my spare time drawings. My friends and teachers encouraged me to complete my dream. I also love reading long novels and long stories which contained drawings.

In the above example, the word drawing was mispronounced as the word drowning /draunɪŋ/. The speaker substituted the vowel /ɔ:/ with /aʊ/. The substitution affected the phonemic status of the vowel, causing a change in the quantity and quality of the vowel. When determining the communicative value of the phonemic contrast made by Speaker 4, the researcher compared the phonemic contrast of /ɔ:/ and /au/ to the same contrast found in Brown's (1988) table. It was found that the phonemic contrast was of low functional load. This means that the phonemic contrast did not distinguish many words in English. By examining the speech, the researcher was able to observe that the word was repeated several times with the same mispronunciation. Thus, the use of repetition strategy was not successful by speaker 4.

By contrast, the repetition strategy was successfully employed by Speaker 5, who repeated correct pronunciations of the mispronounced word improve. The following is an example of the speech produced by speaker 5.

English is an international language. It is spoken by millions of people in all countries. I would like to study English in Britain. There are many advantages to do that. I am thinking to do a course there this summer. I believe that I could improve /impru:f/ (corrected as impru:v/ my English language. Therefore, I intend to pursue my higher studies in English at this college.

In the above example, the word improve was mispronounced as /impru:f/. The speaker substituted the consonant /v/ with /f/. The substitution affected the phonemic status of the consonant, causing a change in voicing. Although the speaker was able to repeat the mispronounced consonant successfully, I examine the confusion carefully because the consonant phoneme /v/ is not part of the sound system of IA, though it does occur in some loan words. When determining the communicative value of the phonemic contrast /f, v/ made by Yasir, the researcher compared the phonemic contrast with the same contrast found in Brown's (1988) table. It was found that the phonemic contrast was of high functional load. This means that the phonemic contrast can distinguish many words in English. Thus, this kind of confusion will greatly affect understanding. The reason for pronouncing the correct form of the word can be the occurrence of this vowel in some loan words related to technology such as television and video.

Another use of the repetition strategy was employed by Speaker 6, who repeated a successful pronunciation of the mispronounced word Facebook /fesbuk/ as /feisbuk/. The following is an example of the speech produced by Speaker 6.

I met my best friend yesterday. I saw her when we were in the mall. We talked about everything and she asked about each one of you. She was talking about herself. She is studying now in the history department and have many friends. She gave me her number and asked me to keep in touch. She also asked me to make a group on Facebook. If you have time please do the Facebook group because I have a lot of work.

In the above example, the word Facebook was mispronounced as /fesbuk/. The speaker substituted the diphthong /ei/ with the short vowel /e/. The substitution affected the phonemic status of the vowel. Although the speaker was able to repeat his mispronunciation successfully, I felt it better to examine the functional load of the phonemic contrasts. When determining the communicative value of the phonemic contrast /ei, e/ made by Jalal, the researcher compared the phonemic contrast with the same contrast found in Brown's (1988) table. It was found that the phonemic contrast was of high functional load. This means that the phonemic contrast can distinguish many words in English. What was also interesting about the use of the repetition strategy was the use of alternative words instead of the mispronounced one. This is the use of the replacement strategy which is explained next.

3. The replacement strategy

The speech data produced by the 12 Iraqi EFL learners revealed instances where the speaker replaced a lexical item with another one. Based on the review of the related literature on communication strategies introduced in section (3.7.4), the substitution of lexical items could be triggered by either lexical or phonological reasons (see Krebt, 2010; Skold, 2008; Jenkins, 2000 and Kaur, 2009). Whether lexically or phonologically motivated, the speaker's use of the replacement strategy was to ensure that the message intended would be easily understood.

In the present study, the speech data revealed instances where the use of the replacement strategy was due to both lexical and phonological reasons. For example, Speaker 4 used the word dreams instead of things in the utterance *I have many things (dreams) in my life*. In a similar vein, Speaker 5 used the word acquired instead of helps in the utterance *improve the language skills that helps (that he acquired)*.

One may ask as how the researcher was sure that the speaker wanted to replace the above lexical words and that such replacements were triggered by lexical rather than pronunciation reasons. In response to this, section (3.7.4) of the Literature Review Chapter showed two approaches to investigate the use of communication strategies: interactional and psycholinguistic. The interactional approach is based on face-to-face interactions whereby one of the participants locates the problematic word and the other attempts to resolve it by using various communication strategies. By contrast, the psycholinguistic approach does not use face-to-face interactions to identify the communication strategies. Rather, the researcher examines the speech data produced by a particular speaker and determines the types of strategies used based on two criteria that must both apply. The first criterion is an immediate self-response by the speaker to replace a previously chosen lexical item by another one. The second criterion decides whether the substituted lexical item was motivated by lexical or pronunciation reasons. This is done by examining whether the speaker's pronunciation of the lexical item deviates from the pronunciation norms set by Gimson's (2001) MGI. In the above examples, the researcher noticed an immediate response by the speakers to replace one lexical item with another. However, the words which the speakers chose to replace, i.e. things and helps, were pronounced correctly as /θɪŋz/ and /helps/ respectively. The pronunciation did not deviate from the norms set by Gimson's (2001) MGI. For this reason, the researcher concluded that such instances were triggered by lexical rather than pronunciation causes.

Although interesting, the above examples were outside the scope of the present study. The focus of the present investigation was on situations where the use of the replacement strategy was directly linked to pronunciation causes (see Jenkins, 2000; Kaur, 2009). To identify such use of the replacement strategy, the researcher relied on the above two criteria: a lexical substitution incurred by mispronunciation and an immediate response by the speaker to correct or modify the mispronunciation. This was clearly observed in the speech samples produced by Speaker 7 and Speaker 8. For example, Speaker 7 used the word funny instead of weird in the utterance *I had something weird (funny) today*. In this example, the word weird /wɪəd/ was mispronounced as /weəd/. Speaker 7 confused the diphthong /ɪə/ with /eə/. To overcome any misunderstanding caused by mispronunciation, the speaker chose to replace the mispronounced word weird with the word funny, correctly produced as /fʌni/.

At this point, I need to re-emphasise that the qualitative aspect of the study aimed to identify the high functional load pronunciation errors that exist in the speech of the 12 Iraqi EFL learners (see section 5.3.1 on functional loads) and the types of strategies these learners employ to overcome misunderstanding. In section (5.3.1), I showed that some phonemic contrasts were very important in maintaining communication i.e. they were of high functional load. When investigating the use of communication strategies in relation to pronunciation, the aim was to provide the Iraqi learners with a set of strategies which they could use when facing difficulties in pronouncing words containing high functional load phonemes. This link between the use of the replacement strategy and high functional load pronunciation errors was clearly observed in the sample speech produced by Speaker 8. Speaker 8 used the word risk instead of trouble in the utterance *This device is a trouble (a risk) to people if misused. It contained ideas which could affect especially the teenagers*.

The mispronunciation of the word trouble could be related to several factors such as interlingual transfer, intralingual transfer and the context of teaching. In this study, I am not interested in identifying the factors behind mispronunciations. I am interested in providing alternative ways of assessing pronunciation based on intelligibility and the functional load principle. In the above example, the word risk was used instead of trouble, mispronounced by the speaker as /tra:bi/. In pronunciation terms, the use of the replacement strategy meant that Speaker 8 used the word risk to overcome any misunderstanding caused by mispronouncing the word trouble /trʌbl/ as /tra:bi/. The issue here is whether the use of the replacement strategy by Speaker 8 to avoid the phonemic confusion of /ʌ/ and /a:/ in the word trouble was of high

importance to understanding. To determine the communicative value of the phonemic confusion /ʌ/ and /a:/, the researcher compared the confusion to the same one found in Brown's (1988) table. The result was that the phonemic contrast was of high functional load. Hence, the use of the replacement strategy in relation to words containing high functional load pronunciation errors is very crucial to understanding since these errors can cause confusion in distinguishing a considerable number of words in English.

4. Time gaining strategy

Dörnyei and Scott (1995:194) suggest adding stalling or time taking (the use of pause fillers and hesitation gambits) to the communication strategies. These strategies are not used as a result of language deficiency but rather to help the speaker gain time to keep the communication channel open when they encounter a problem. Pauses, fillers and hesitation gambits have been labelled as indirect strategies. According to Dörnyei and Scott (ibid), this strategy provides conditions for preventing a breakdown in communication. Data analysis of the speech samples reveals two opposite situations. These fillers were successfully used by Speaker 9 to facilitate the flow of thought and complete the task. The following is an example of the speech produced by the speaker.

A true friend is rare and hard to find nowadays. A true friend should be near you and make you feel that err you are not alone especially in difficult times. A good friend will not be afraid to tell you when you are wrong. He mm shares your pain and grief. We cannot dispense with friends even if we have brothers and sisters.

In the above example, I was interested in finding out whether the speaker continued his speech after using the time gaining strategy or not. As the speech extract shows, the use of time gaining strategy helps Speaker 9 to form his ideas and express himself in a good way. The strategy helped him to finish the task successfully.

By contrast, Speaker 10 employed the time gaining strategy too much. The excessive use of these time gaining strategies made Speaker 10 stumble on every word of his speech. The frequent pauses and hesitations distorted his speech. This results in the researcher having trouble coping with the message delivered or the speaker finally abandoning the task. The following is an example from the speech produced by the speaker.

I am citizen. I live in Iraq, Baghdad. I am the sole brother of my family. I am divided and I am divided (pause) between work or study. I (pause) wish to develop my language skills.

In addition to the above communication strategies which were found in the speech of the twelve Iraqi EFL learners, two other strategies were identified by the researcher. There were instances during the speaking task when the researcher interfered to facilitate the smooth running of the task and to make sure that enough speech data would be generated. This happened with two of the twelve Iraqi EFL learners, Speaker 11 and Speaker 12. Speaker 11 stumbled over the pronunciation of the words agricultural and province, and I felt the need to provide correct pronunciations as feedback. I felt that the speaker wanted help with the correct pronunciation. The 'ask for help strategy' ensured that Speaker 11 would complete her speaking task successfully. The following is an example of the speech produced by the speaker.

We went on a trip to Nisan province in Southern Iraq. In that province we saw many animals in all the roads like cows, foxes, dogs and chickens. We passed across many beautiful agricultural areas. These agricultural areas were very beautiful, with rivers and tall trees all the road. When we arrived in our place, I went fishing, but I didn't catch a lot of fish. The experience was really very interesting.

The second strategy which emerged because of the researcher's subjective involvement was the 'strategy of lexical anticipation'. This strategy was also used by the researcher when he felt that Speaker 12 lacked the appropriate word to describe his ideas. Thus, the strategy of lexical anticipation was used in providing words like entertainment and literary. These words were provided by the researcher to enable the speaker's ideas to flow smoothly. The following is an example from the speech produced by speaker 12.

The world of books is especial and large world. You should read books for knowledge, and entertainment. One should develop his abilities in reading, writing and thinking. There are many types of books related to our life like religion, literary and social books. They are considered the sources of information for everything.

In this aspect of the qualitative analysis, the communication strategies identified in the speech of Iraqi EFL learners are distinct in type and nature from the communication strategies

identified by the related studies mentioned in the Literature Review Chapter. In the present investigation, the various types of communication strategies are identified based on the pronunciation problems Iraqi EFL learners encountered while speaking. This pronunciation-based approach to communication strategies has led to the limited number of strategies identified by the researcher. Also, the speaking task itself influenced the types of communication strategies identified in the speech of Iraqi EFL learners. The Iraqi EFL learners were not asked to partake in face to face interaction in English. They were simply asked to choose a topic from a list of topics and talk about it. If face to face interactions had been used, other types of communication strategies would have surfaced.

5.3.3. Summary of the qualitative results

The qualitative aspect of the study aims to validate and expand the quantitative findings by investigating the functional load of phonemic contrasts and the various communication strategies Iraqi EFL speakers use to overcome pronunciation problems. It has been shown in the quantitative analysis that foreign accent and accent familiarity affect both the productive and perceptive intelligibility scores respectively. Some aspects of these two factors have a facilitating effect, whereas others have an impeding effect. In a similar vein, the qualitative analysis shows that some functional load phonemic contrasts, if mispronounced, will have serious effect on understanding. In this respect, the qualitative findings have triangulated the quantitative ones by suggesting an alternative way to assess intelligibility via the use of functional load. The analysis results in suggesting a list of segmental phonemic contrasts arranged hierarchically in terms of their effect on maintaining meaning, following Brown's (1988) approach to phonemic contrasts.

As far as the expansion of the quantitative findings is concerned, the study identifies several communication strategies used by Iraqi EFL speakers to overcome pronunciation problems. These strategies are limited in number because they have been identified based on pronunciation problems only. These communication strategies include the let it pass strategy, the replacement strategy, the time gaining strategy, the repetition strategy, the ask for help strategy and the lexical anticipation strategy.

5.4. Discussion of the Results

This section presents the discussion of the findings in relation to the findings of related studies and the theoretical principles of speech production and perception guiding the investigation. To enable a smooth narrative and clear presentation, the discussion is presented according to the three research questions. For the purpose of triangulation, the qualitative findings are integrated into the discussion to validate and expand upon the quantitative ones.

5.4.1 Research question one

To what extent is Iraqi EFL learners' speech production intelligible to native English listeners? Does foreign accent cause statistically significant variations in productive intelligibility scores?

The question investigated the productive intelligibility of Iraqi EFL learners in relation to the segmental aspect of foreign accent. The focus was first to measure the overall productive intelligibility and then identify which aspects of a foreign accent at the segmental level most negatively affect the productive intelligibility of Iraqi EFL learners.

Based on the results obtained from the production intelligibility test, the overall finding revealed that Iraqi EFL learners' sound production was intelligible, [$t(179) = 7.889, p < 0.05$, with a mean difference of (.41689)]. The overall finding was determined based on how the pronunciation of the words in the reading passage converged and diverged from Gimson's (2001) MGI. The finding indicated that Iraqi EFL learners were able to produce correctly most of the segmental phonemic distinctions in accordance with Gimson's (2001) MGI. According to Gimson (2001:298), an EFL learner's performance in English will be intelligible worldwide if the learner "possesses a set of distinctive elements which correspond in some measure to the inventory of the RP phonemic system."

In the present study, the above overall finding was also validated qualitatively by comparing the phonemic contrasts found in the speech of the 12 Iraqi EFL learners to the two categories of low and high functional load phonemic contrasts established by Brown's (1988) functional load principle. Based on such comparison, the productive intelligibility of Iraqi EFL learners

could be predicted based on identifying pronunciation errors in terms of their low and high functional load categories. Following Brown's (1988) approach, the researcher used a three-part procedure to identify, categorise and prioritise the pronunciation errors found in the speech of Iraqi EFL learners. For example, the data analysis of Iraqi EFL learners' speech showed that the vowel /e/ is confused with /ɪ/. For instance, the word lesson /lesn / was mispronounced as /lɪsn/. The same confusion was also detected in words like websites and well. When comparing Iraqi EFL speakers' phonemic confusion between /e, ɪ/ with the same confusion in Brown's (1988) table, the sound confusion was of high communicative value and any mispronunciation could lead to intelligibility failure.

The above examples revealed that classifying the phonemic contrasts made by Iraqi EFL learners in relation to Brown's (1988) high and low functional load could better predict or reflect the productive intelligibility level of Iraqi EFL learners. In this respect, the qualitative data were used to validate the quantitative findings by suggesting alternative ways of measuring the productive intelligibility of Iraqi EFL learners. By integrating the functional load principle within intelligibility research, the present researcher emphasised that pronunciation errors should be identified based on their communicative value rather than frequency counts. From a pedagogical perspective, such approach would lead to identify and prioritise those types of errors which could lead to intelligibility failure. In this study, the researcher suggested a list of segmental phonemic contrasts to be incorporated into Iraqi EFL classrooms. Overlooked by intelligibility researchers, Brown (1988:604) pointed out long time ago that "pronunciation work should be designed to give priority to those confluences of relatively greater importance, whereas those of lesser importance may be left for later practice, if indeed there is sufficient time to cover them at all."

This overall productive intelligibility finding of the study was in sharp contrast to the findings arrived at by related pronunciation studies in the Iraqi context. It was mentioned in the Literature Review Chapter that Iraqi EFL learners were regarded as incompetent as far as speech production was concerned. The main reason for that negative judgment was not a defect in their performance. It was because the pronunciation model used as a reference point emphasised the perfect mastery of English RP, a goal impossible to achieve in EFL contexts. A good example to clarify this was the study on syllabic consonants conducted by Mahud (1998). The findings of the study revealed that Iraqi EFL students were unable to produce the English syllabic consonants. Although that study revealed interesting contrasting results, it

failed to provide an accurate assessment of Iraqi EFL learners' performance because it was based on perfection in mastering the sound system of RP. Also, the communicative value of the syllabic consonants investigated in Mahud's (1998) study was of no serious effect on understanding as confirmed by Gimson (2001). In commenting on syllabic consonants, Gimson (ibid:320) asserted that modifying the pronunciation of syllabic consonants by inserting a schwa before them will not affect the intelligibility of the speaker. Thus, the syllabic [l] in the word little can be pronounced as /litəl/, a feature found in most Iraqi EFL learners' interlanguage phonology. Mahud's (1998) approach to pronunciation was followed by most of the related studies reviewed in Iraq like the studies conducted by Al-Juwari (1997), Wadi (1987), Ahmed (2000), Rashid (2009) and Khudhair (2015). The present study can be considered a starting point for further research on pronunciation based on intelligibility.

The second part of research question one focused on identifying which segmental aspect of a foreign accent most negatively affected the productive intelligibility of Iraqi EFL learners. In this respect, the Literature Review Chapter of the study identified two contradicting results based on following two distinct approaches. The first approach investigated the segmental aspect of a foreign accent in terms of three levels of difficulty in sound production following Flege's (1995) Speech Learning Model (SLM) and the moderate version of CAH. The findings of the related studies revealed that the levels of difficulty followed three distinct routes: identical phonemes in the two contrasted languages are the easiest to produce, entirely different phonemes are easy to produce, and partially similar phonemes are the most difficult.

The second approach investigated the segmental effect of a foreign accent in terms of similarities and differences. Here, the findings revealed that similar phonemes were easy to produce, whereas different phonemes were difficult.

To identify which aspect of the segmental phoneme affected the productive intelligibility of Iraqi EFL learners, the present researcher classified the segmental phonemes into three categories based on phonetic and phonemic differences into identical, partially similar and different phonemes. The findings of the present study revealed that different phonemes between the sound system of Iraqi Arabic and English were responsible for most intelligibility failure with $[t(59) = 1.268, p > 0.05]$ compared to the production of identical phonemes $[t(59) = 13.128, p < 0.05]$ and partially similar phonemes $[t(59) = 5.212, p < 0.05]$.

This finding did not support the three levels of difficulty in segmental production proposed by Flege's (1995) SLM and the moderate version of CA. It contradicted the findings of the studies by Al-Abdely (2016) and Almbark (2012) who emphasised that partially similar phonemes caused most of the production difficulties for Iraqi and Syrian EFL learners respectively. By contrast, the finding of the study supported the ones which were based on the weak version of the Contrastive Analysis Hypothesis. In such studies, intelligibility failures were ascribed to the level of difficulty in producing different segmental phonemes in the contrasted languages under investigation (see, Anderson-Hsieh 1995; Roger 1997; Bent, Bradlow and Smith 2007; Nikolova 2012 and Kirkova-Naskova, 2010).

Although the findings of the study supported other findings confirming the importance of different phonemes to accurate speech production, they differed from such studies in two ways. The first difference was that, in statistical terms, some of the different phonemes in the present investigation were correctly produced by the Iraqi EFL learners [$t(59) = 1.268, p > 0.05$, with a mean difference (.09200)]. This finding contrasted with the ones arrived at by the studies conducted in Iraq which showed that different segmental English phonemes were always mispronounced (see Ahmed, 2000; Al-Juwari, 1997; Wadi, 1987 and Al-Owaidi, 2017). The second difference was related to the nature and the importance of the identified different phonemes to accurate speech production. Based on Gimson's (2001) MGI and Brown's (1988) functional load, the findings of the study revealed that some confluences in the present study were not identified either because they were considered as acceptable variants by Gimson (2001) or of low functional load by Brown (1988). For example, the data analysis of Iraqi EFL learners' production of English words containing the diphthong /uə/ revealed that they often confused this diphthong with /u:/. For instance, the word *poor* /puə/ was mispronounced as /pu:r/ in *Stop killing poor animals*. When comparing Iraqi EFL learners' phonemic confusion of /uə, u:/ with the same confusion in Brown's (1988) table, the sound confusion was of a low functional load. This meant that the vowel confusion was of less communicative value and it would not greatly lead to intelligibility failure. Similarly, some of the segmental phonemic differences were regarded as of no importance to intelligibility by Gimson's (2001) MGI. This further reduced the number of phonemic differences between IA and MGI. For example, the only consonantal phonemic contrasts in IA and MGI were /p, v, ʒ and ŋ/. Even within these three phonemic contrasts, the /v/ and /ʒ/ phonemes are used in Iraqi Arabic in some English loan words like video and television. Also, the /ŋ/ sound is not considered essential for understanding and its phonetic variation /ng/ is considered acceptable (Gimson, 2001).

Regarding vowel system, Gimson (2001) mentions that some English vowels if mispronounced will not affect intelligibility like the monophthong /ʌ/ and the centring diphthongs /ɪə eə ʊə/. These centring diphthongs can be simplified as a vowel + r, by the retention of postvocalic r. This simplification would result in producing /i:r, e:r and u:r / respectively in words like peer / pi:r/ , pair / peir/ and poor / pu:r/ or / pɔ:r/.

The above findings of the present study based on intelligibility contradicted the negative opinion held by Kharma and Hajjaj (1989:14) who wrote:

Arab learners of English face the problem not only in recognizing certain sounds but also of producing them. A more serious problem, however, in that it can lead to misunderstanding, is that of confusing these sounds. Because of the relatively small number of vowels in Arabic, learners tend to use just one of (Arabic or English) vowel to represent more than one English sound.

5.4.2. Research question two

To what extent is English speech intelligible to Iraqi EFL learners? Does accent familiarity cause significant differences in perceptive intelligibility scores?

The question investigated the perceptive intelligibility of Iraqi EFL learners in relation to accent familiarity. The focus was first to measure the overall perceptive intelligibility of Iraqi EFL learners and then identify which levels of accent familiarity most negatively affected the perceptive intelligibility.

In this study, it must be emphasised that perceptive intelligibility referred to the understanding of the literal meanings of spoken words and utterances as uttered in a contextualised discourse (James, 2014:212). The overall quantitative finding revealed that Iraqi EFL learners could understand with a varying degree of effort the English speech produced by the three English speakers: $[t(179) = 8.464, p < 0.05, \text{ with a mean difference of } (.53894)]$. When examining the overall perceptive intelligibility across the three accent familiarity levels, significant variations in Iraqi EFL perceptive intelligibility were observed: $[F(2,277) = 108.410, P < 0.05]$. In the present study, the positive effect of accent familiarity was observed most frequently with the Iraqi EFL speaker: $[t(59) = 19.616, p < 0.05]$, representing matched accent familiarity level. The

same significant finding was also observed with the British English speaker: [$t(59) = 8.646, p < 0.05$], representing a mismatched accent familiarity. However, the finding related to the unfamiliar Chinese English speaker revealed that the speaker's accent caused lots of the problems in understanding: [$t(59) = 4.284, p < 0.05$]. The Chinese accent had negative impact on understanding the spoken English discourse by the Iraqi EFL listeners.

To clarify the above statement, the perceptive intelligibility test was used to measure the effect of accent familiarity level on the perceptive intelligibility of Iraqi EFL learners. In this respect, perceptive intelligibility referred to the understanding of the basic literal meanings of spoken words and utterances using phonetic, linguistic and lexical knowledge. In this test, a listening text read by three English speakers who represented various accent familiarity levels was presented to the 60 Iraqi EFL learners. These learners were asked to assess their understanding of the text based on a five-point Likert scale. One of the three speakers was a Chinese English speaker. In order to measure the perceptive intelligibility of Iraqi EFL learners to this Chinese speaker, the researcher used a one sample t-test whereby the mean of the research sample was compared to the hypothesised population mean. Based on the statistician consulted, the result was significant for the hypothesised mean. This meant that the Chinese accent caused lots of the misunderstandings. In statistical terms, the difference between the sample mean and the hypothesised population mean was statistically significant for the sample mean: $t(59) = 4.284, p < 0.05$. This meant that most of the scores assigned to the Chinese speaker were low reflecting greater listeners' efforts or problems in understanding the speaker.

The above findings of the study supported the ones arrived at by Gass and Varonis (1984), Bent and Bradlow (2003), White et al (2016), Carey et al. (2011), Bogorevich (2018) and Browne (2016). In commenting on the facilitating effect of accent familiarity on intelligibility, Browne (2016) confirmed in his study that the overall pronunciation scores and intelligibility were significantly affected by listeners' accent familiarity levels. There were variations in these two aspects according to the scores assigned by the listeners. The effect of accent familiarity on intelligibility was also supported by Kuhl's (1991) Perceptual Magnet Theory. The theory emphasised that listeners could develop the ability to perceive the targeted words if they shared the same first language with the speaker or had enough exposure to the language. Similarly, Pierrehumbert's (2001) Exemplar Theory maintained that listeners would be able to identify not only single phonemes but all other non-linguistic information accompanying the speakers' utterances. These exemplars represented a constellation of various linguistic experiences which

could be associated with particular words, people, accents and sounds, all stored for a considerable time in what was referred to as ‘exemplar clouds’ (Pierrehumbert, 2001:3).

By contrast, the above significant variations of intelligibility due to the effect of accent familiarity were not supported by some related studies such as those of Munro, Derwing and Morton (2006), Kennedy and Trofimovich (2008) and Algethami (2010). In their studies, these researchers claimed that the learners’ proficiency level and the sound system of the target language were responsible for the success or failure of intelligibility. For example, Algethami (2010) emphasised the role of phonological transfer in facilitating or impeding the intelligibility of non-native English speakers. His findings showed a small and not statistically significant differences due to the effect of accent familiarity.

By analogy, one might argue that the findings of the present study were influenced by the context of the discourse. The review of the literature on intelligibility confirmed that native English listeners as well as non-native English listeners could use the context, linguistic or non-linguistic, to infer the words intended by the speakers even if they were mispronounced (Brown,1990; Kim, 2009). Once the context of the discourse was known, English speech could be easily recognised and understood even if some words were mispronounced (Zielinski, 2006:25). Inferring words and meaning from context is also confirmed by Kirkpatrick’s (2007:122) lexical anticipation and Jenkins’ (2000:81) co-text, where the existence of certain words in speech will help listeners to infer other words. In the present study, the elements of context were considered part of the construct validity of the speech intelligibility test used. In both the productive and perceptive intelligibility tests, the researcher included the appropriate parameters of the context. This approach to investigating learners’ accented English in context was based on the definition of the term speech perception used (see section 3.2). in this respect, Gimson (2001:298) stated that successful interaction in English at this intelligibility performance level often required " that the context is known, and the listener can tune in to the foreign accent.”

In the present study, there were qualitative data in the speech of the twelve Iraqi EFL speakers which reflected both the facilitating and the impeding factors affecting intelligibility. These factors had already been explained quantitatively when discussing the productive and perceptive intelligibility of Iraqi EFL learners in relation to foreign accent and accent familiarity. In the qualitative aspect of the study, the aim was to identify instances of

mispronunciations in the speech of the twelve Iraqi EFL learners and examine what types of communication strategies these learners employed to overcome the pronunciation problems. Such strategies included the let it pass strategy, replacement strategy, repetition strategy, time gaining strategy, ask for help strategy and lexical anticipation strategy. For example, several words were mispronounced by Speaker 1. The word watch was mispronounced as /wɒʃ/, luck was mispronounced as /lɒk/ and colleague as /kɒlɪdʒ/. These mispronunciations resulted in new different words with lexical changes. When examining the speech, in this particular instance, the researcher noticed that speaker 1 did not pay any attention to the mispronunciations. The speaker simply let them pass. This could be interpreted in the sense that meaning might be clarified as the speech continued.

5.4.3. Research question three

Is there any relationship between the productive and perceptive intelligibility of Iraqi EFL learners?

The question investigated the relationship between the productive and perceptive intelligibility of Iraqi EFL learners. In particular, the aim was to find out whether Iraqi EFL learners' speech production corresponded with their understanding. It was mentioned that the productive intelligibility was investigated in relation to the three levels of difficulty in a foreign accent. Whereas, perceptive intelligibility was investigated in relation to listeners effort due to their accent familiarity levels. In this respect, the overall finding of the study revealed a strong positive relationship between the productive and perceptive intelligibility of Iraqi EF learners (0.701). This meant that the scores assigned to Iraqi EFL learners' speech production corresponded with the scores indicating their understanding.

However, this overall relationship varied with respect to the three levels in a foreign accent and accent familiarity. This further revealed three types of relationship. First, there was a strong positive relationship between the production scores of words and utterances containing identical phonemes and the perception scores assigned in relation to matched accent familiarity (0.833). The more identical phonemes exist between the native language and the target language, the more understandable with less effort the foreign accented speech is. Second, there was a strong positive correlation between the production scores of words and utterances

containing partially similar phonemes and the perception scores assigned in relation to mismatched accent familiarity (0.719). The more partially similar phonemes existed between the native language and the target language, the more understandable with less effort the foreign accented speech. Third, there was a correlation between the production scores of words and utterances containing different phonemes and those assigned in relation to unfamiliar accent (0.011). The more different phonemes existed between the native language and the target language, the more effort Iraqi EFL learners needed to understand the speakers' words and utterances.

The relationship between speech production and perception is confirmed by related pronunciation studies (see Cruz,2003; Field,2005, Almbark, 2012; Muniyadamusta, 2005). For example, Muniyadamusta's (2005) study confirmed this relationship when examining the segmental phonemes produced and perceived by Rwandan EFL learners. Muniyadamusta (2005:450) emphasised that Rwandan EFL learners' failure in producing some English segmental phonemes was reflected in their failure to recognise them as well. Similarly, Almbark's (2012) findings supported the synchronic relationship between the production and perception of single words by Syrian EFL learners. Furthermore, speech production and perception theories such as Flege's (1995) SLM and Best's (1995) PAM provided further evidence supporting this relationship (see section 3.9).

Although the findings of the present study were in line with other related findings, they differ in the approach used to determine the relationship between production and perception. In the present study, the intelligibility of Iraqi EFL learners was determined based on the amount of effort they needed to understand spoken English. Thus, successful production was equated with less listeners efforts, whereas unsuccessful production was equated with more listeners efforts as revealed by the quantitative results of the study. This approach resembles the one followed by Browne (2016) and Kim (2008). However, it contrasts with most of the pronunciation studies conducted in the Iraqi EFL context. The relationship between the productive and perceptive intelligibility of Iraqi EFL learners was also qualitatively validated. In this regard, the Iraqi EFL learners' successful speech production and perception corresponded to their ability to produce and perceive high functional load segmental phonemic contrasts in English.

5.5. Summary and Conclusion

The chapter presented the results and discussions of the quantitative and qualitative aspects of the study. The quantitative results were grouped into three categories: productive intelligibility results, perceptive intelligibility results and correlation results. The overall results indicated that Iraqi EFL learners were intelligible in terms of speech production and perception. However, there were variations in these two aspects of intelligibility due to foreign accent and accent familiarity. The qualitative aspect of the study was intended to validate and expand the quantitative findings. In this respect, the findings were grouped into two categories: functional load and communication strategies. The functional load analysis identified several segmental phonemic contrasts of high functional load which were of importance to the productive intelligibility of Iraqi EFL learners. The qualitative analysis also identified several communication strategies the Iraqi EFL learners used when there were pronunciation problems. These communication strategies included the let- it- pass strategy, the replacement strategy, the repetition strategy, time gaining strategy and asking for help strategy.

This chapter introduced several themes. First, pronunciation errors should be identified and evaluated based on intelligibility and the functional load principle. A frequency count of errors is no longer a good evaluation of the EFL learners' proficiency level in English. In this regard, the results of the study were based on the above two principles of intelligibility and functional load. The study emphasised that pronunciation errors should be determined based on intelligibility and prioritised based on Brown's (1988) functional load approach. Second, the use of English in its international context revealed the importance of accent familiarity as a speech intelligibility benefit. This effect was validated in the present study when the Iraqi EFL learners were required to listen to English speech produced by three English speakers from different first language backgrounds. The three principles of intelligibility, functional load and accent familiarity should be regarded as of great importance to pronunciation as revealed by the results of the study. Third, the importance of communication strategies was also emphasised by the results of the study. From a psycholinguistic perspective, the speakers could resort to several strategies when there was a gap between their linguistic knowledge and the intended message they want to deliver. This point emphasised the active role of the FL learner. This focus on the learner was emphasised in the qualitative aspect of the study when investigating communication strategies in relation to pronunciation problems.

Based on the above findings, the next Conclusions and Implications Chapter of the study will explain the pedagogical value of the findings, the contribution of such findings to the field of intelligibility and the Iraqi EFL context. In addition to new knowledge in the intelligibility field, new knowledge to methodology will be explained. These points besides others will be presented in the next chapter.

CHAPTER SIX: CONCLUSIONS AND IMPLICATIONS

6.1. Introduction

This study investigated the productive and perceptive intelligibility of Iraqi EFL learners in relation to foreign accent and accent familiarity. The basic theoretical assumption of the study was that an intelligibility level of universal validity for non-native English speakers is best achieved when speech performance in English is based on native English speakers (Gimson, 2001; Quirk, 1990; Atechi, 2004; Cruttenden, 2014). The previous chapter presented and discussed the quantitative and qualitative results of the study. This chapter is divided into seven sections. The chapter starts with a brief account of what is involved in the study followed by a summary of the main findings. Then, a detailed discussion of the contribution to knowledge is presented. Next, the chapter describes the pedagogical implications and the limitations of the study. It concludes with suggestions for further research.

6.2. Outline of the Thesis

The purpose of the present investigation was to measure the productive and perceptive intelligibility of Iraqi EFL learners in relation to foreign accent and accent familiarity. For this purpose, a mixed methods research approach was adopted. The aim of the approach was to collect different but complementary data on the same topic to validate and expand the quantitative findings with qualitative data (Creswell and Plano Clark, 2007:62). Thus, the quantitative data obtained from the speech intelligibility test were triangulated qualitatively through a speaking task eliciting speech data from twelve Iraqi EFL speakers. The qualitative aspect of the study was set to triangulate the quantitative findings by providing alternative ways of assessing intelligibility. It further expanded the factors affecting intelligibility by focusing on the communication strategies Iraqi EFL speakers used when facing pronunciation problems.

6.3. Summary of the Findings

The present mixed methods study assessed the productive and perceptive intelligibility of Iraqi EFL learners in relation to foreign accent and accent familiarity. The overall quantitative findings revealed that Iraqi EFL learners were intelligible at the speech production and perception levels. However, there were variations in the scores assigned to intelligibility at

these levels due to the effects of foreign accent and accent familiarity. Based on the deductive qualitative content analysis conducted, the qualitative findings identified two lists which contributed to the intelligibility of Iraqi EFL speakers. The first was a list of pronunciation errors based on their functional loads and the second was a list of communication strategies employed to overcome intelligibility failure.

The above findings were based on the following research questions of the study:

1. To what extent is Iraqi EFL learners' speech production intelligible to native English listeners? Does foreign accent cause statistically significant variations in productive intelligibility scores?

The question focused on measuring the overall productive intelligibility of Iraqi EFL learners and identifying which aspects of a foreign accent at the segmental level most negatively affected intelligibility. The overall finding revealed that Iraqi EFL learners' sound production was intelligible. The finding was determined based on how the pronunciation of the words in the reading passage converged and diverged from Gimson's (2001) MGI. The overall finding was also validated qualitatively by comparing the phonemic contrasts found in the speech of the 12 Iraqi EFL learners to the two categories of low and high functional load errors established by Brown's (1988) functional load approach. The second part of the above research question focused on identifying which segmental aspects of a foreign accent most negatively affected the productive intelligibility of Iraqi EFL learners. The findings revealed that most of Iraqi EFL learners' intelligibility failure was ascribed to the mispronunciation of different segmental phonemes in the sound system of English and Iraqi Arabic.

2. To what extent is English speech intelligible to Iraqi EFL learners? Does accent familiarity cause statistically significant variations in perceptive intelligibility scores?

The question focused on measuring the overall perceptive intelligibility of Iraqi EFL learners and identifying which levels of accent familiarity most negatively affected intelligibility. The overall quantitative finding revealed that Iraqi EFL learners could understand with a varying degree of effort the English speech produced by the three English speakers. However, there were variations in perceptive intelligibility due to accent familiarity levels. In this respect, some accents had positive effects on intelligibility, whereas others had an impeding effect. The

positive effect of accent familiarity on listeners' understanding was observed with the Iraqi EFL speaker and the British English speaker representing matched and mismatched accent familiarity respectively. By contrast, the impeding effect related to the unfamiliar Chinese English speaker. In the present study, there were qualitative data in the speech of the twelve Iraqi EFL speakers which reflected both the facilitating and the impeding factors affecting intelligibility such as the use of various communication strategies.

3. Is there any relationship between the productive intelligibility and the perceptive intelligibility of Iraqi EFL learners?

The overall finding of the study revealed a positive relationship between the productive and perceptive intelligibility of Iraqi EF learners. The overall score assigned to Iraqi EFL learners' speech production corresponded with the overall score assigned to their understanding of English speech produced by three different English speakers. This overall relationship between the productive and perceptive intelligibility was also observed between the three levels of difficulty in segmental production: identical, partially similar and different and the three levels of accent familiarity: matched, mismatched and unfamiliar.

6.4. Pedagogical Implications of the Study

Based on its findings, the study emphasised the necessity to make changes related to the goal of teaching pronunciation, the type of pronunciation model, the factors emphasised for good pronunciation and the teaching approaches used for pronunciation instructions in the Iraqi EFL classrooms. The first implication of the study related to the goal for the teaching of pronunciation. At present, most researchers emphasise the importance of setting intelligibility rather than perfection as the most practical and achievable goal for pronunciation instruction. In the Iraqi EFL context, however, perfection in mastering the sound system of Received Pronunciation RP is regarded as the required goal for pronunciation instruction. Being impractical and less likely to achieve for EFL learners, the present study recommended that intelligibility should replace RP in Iraqi EFL pronunciation classrooms. For this purpose, the study suggested Gimson's (2001) MGI as the targeted pronunciation goal for Iraqi EFL learners.

The second implication of the study concerned setting pronunciation priorities for classroom instructions. In Iraq, most researchers used pronunciation accuracy as the only criterion to determine the types of priorities for classroom instructions. That was based on the frequency counts of the errors Iraqi EFL learners committed. The present study, however, used communicative criteria to establish such pronunciation priorities for classroom instructions. That was based on categorising the pronunciation errors in terms of low and high functional load according to Brown's (1988) approach to functional load of English phonemic contrasts.

The third implication of the study was related to the use of English in its global or international context among native and non-native English speakers. In the present study, the emphasis on investigating the effect of accent familiarity on intelligibility implied that Iraqi EFL learners should be exposed to various native and non-native varieties of English. This could be done by having native and non-native pronunciation tutors as well as including a variety of English accents using audio and video teaching materials.

The fourth implication of the study concerned the use of communication strategies in relation to pronunciation. Iraqi EFL learners can be trained in these strategies by implementing different speaking tasks inside the classroom. For example, the teacher can use two-way information gap tasks inside the classroom. These tasks can be used to exchange information among the students. Each student possesses some piece of information needed by other students to complete the task successfully. The teacher can modify the task by choosing specific words which contain the types of phonemes emphasised by the teacher.

The last implication was in relation to the approach adopted for the teaching of pronunciation. In this respect, the researcher suggested an intelligibility approach to the teaching of pronunciation. Based on the findings of the study and related pronunciation research, the suggested intelligibility approach was based on the following four criteria.

1 Selectivity (Brown, 1988)

The selectivity criterion emphasised the selection of certain pronunciation features and concepts which were important for the aspect of pronunciation investigated. Selectivity entailed that the selected features and their related concepts should be presented and practised earlier than others. In this study, the selectivity criterion was demonstrated in three ways. First,

the researcher suggested a list of segmental phonemes hierarchically ordered in terms of their functional loads. The mastery of this list is important for any Iraqi English language learner who wants his speech production to be understood by others. The second selected feature related to the importance of accent familiarity to intelligibility. For intelligibility purpose, accent familiarity should be presented to Iraqi EFL learners who aim to use English in its global context. The third selected feature was a list of communication strategies which Iraqi EFL learners could use to overcome pronunciation problems.

2 Explicit content instruction (Derwing&Munro,2005)

Explicit content instruction referred to the theoretical presentation of the selected pronunciation aspects. According to Derwing and Munro (2005:387), a phonetic and phonological knowledge of how sounds are produced and realised under certain phonotactic restrictions are important for better oral production. In presenting the phoneme /p/, for example, the pronunciation teacher should explain the phonetic features of this sound in terms of place of articulation (bilabial), manner of articulation (plosive) and voicing (voiceless). A phonological description of the above phoneme relates to the allophonic variants which this phoneme has in different phonetic environments such as the aspirated and unaspirated allophones of the /p/ phoneme. Such phonetic and phonological descriptions of the sound system of English can be found in any book dealing with English pronunciation.

Being relevant to the international use of English, the term accent familiarity should be clearly defined and its importance to the global use of English should be emphasised. In this respect, pronunciation teachers should incorporate native and non-native English accents in pronunciation classrooms.

3 Multi-modality (Levis, 2018)

The multi-modality criterion referred to the link between pronunciation and other aspects of language. It emphasised two points. The first point concerned the multi-faced aspect of pronunciation which involved production and perception. The point to emphasise here was that the progress in one aspect would lead to improvement in the other. In other words, the creation

of phonological categories at the perception aspect of pronunciation would enforce them on the production aspect. In this respect, Levis (2018:232) confirmed that “better production is tied to better perception.” Thus, the pronunciation practice of the suggested list of segmental phonemes should be at the production as well as the perception level. The second point related to the link between orthography and pronunciation learning. This linkage emphasised the presentation of certain rules which could help connecting written representations to spoken ones. In other words, the teacher should present some spelling rules which could be of help in improving the learners’ pronunciation. For example, the ‘ar’ letters in a word like car can be pronounced as /a:/.

4 Communication (Jenkins, 2000)

The final criterion was communication which meant that pronunciation activities should be designed and practised in contextualised discourses. Here, the emphasis was that the targeted pronunciation features should be the centre of the communicatively based pronunciation activity. Following this, various pronunciation tasks could be suggested including discourses involving minimal pair tasks, listening discrimination tasks and the use of information gaps which include similar different tasks, picture sequencing tasks and map tasks.

6.5. Contributions of the Study

The assessment of non-native English pronunciation abandoned the requirement of RP perfection on the part of non-native English speakers. Instead, intelligibility was proposed as a more practical and achievable performance target for non-native English speakers (Isaacs and Trofimovich, 2016:5). Thus, many studies were conducted worldwide advocating intelligibility rather than perfection as the performance goal for non-native English speakers (Holland, 2000; Flemming, 1977; Kim, 2008; Jenkins, 2006a, 2009, 2000; Derwing and Munro, 2009, 2005; Cavalheiro, 2015; Saito, 2007). Unfortunately, the shift of pronunciation research to intelligibility is yet to occur in Iraqi EFL classrooms and research practice. To the best of my knowledge, pronunciation studies conducted in Iraq up to the present time focus on the unattainable perfect mastery of English RP accent (Rashid, 2011; Al Abdely and Yap, 2016; Al-Azzawi and Barany, 2015; Al Owaidi, 2017). The present study combined Iraqi EFL

pronunciation research with up to date theoretical and research practice in English pronunciation by adopting the intelligibility approach to the investigation of Iraqi EFL accented English.

The first contribution of the study was related to the integration of functional load in intelligibility research. In setting priorities for the teaching of pronunciation, most intelligibility researchers based these priorities on how far EFL learners' pronunciation deviated from an established reference pronunciation model, namely Jenkins' (2000) *Lingua Franca Core* and Gimson's (2001) *Minimum General Intelligibility*. Although the present study adopted Gimson's (2001) MGI to assess the intelligibility of Iraqi EFL learners' accented English, setting priorities for the teaching of pronunciation required an essential further analysis using the functional load principle. It was not enough to determine that certain phonemes were mispronounced by EFL learners. What was more important than a mere identification of mispronunciations was knowing the type of phonemic contrasts and their functional loads. Based on this further analysis of the mispronunciations, the present study suggested a list of segmental phonemic contrasts to be incorporated in Iraqi EFL classrooms.

The second contribution to new knowledge in the field of intelligibility was the relationship between form and meaning. Some researchers believed that intelligibility should be restricted to the production and recognition of the formal phonetic properties of words. In this sense, intelligibility had nothing to do with meaning. For this purpose, these researchers used words in isolation, nonsense words or phrases and decontextualised sentences. Other researchers defined and investigated intelligibility with reference to meaning. Such researchers believed that listeners' ability to write correctly the spoken words in their original spellings was an indication of their understanding. Such researchers were criticised for the following reasons. First, the data collection tool used was a phonetic one, namely word transcription. Second, the type of meaning understood was not defined, that is, whether the meaning was literal or figurative. Third, the criteria used to define intelligibility in relation to understanding were not specified.

To define intelligibility in relation to listeners' understanding, the present study proposed extending the term perception to include phonetic, linguistic-contextual and meaning components. In this respect, the term perception will no longer be tied to the recognition of the phonetic properties of the spoken words by the listener. The listener can use his phonetic,

linguistic and lexical knowledge to understand the literal meanings of the spoken words or utterances in contexts. In this respect, understanding could be achieved even if some words were mispronounced by the speakers. This distinction between recognition (identifying the phonetic properties of spoken words and utterances) and perception (understanding the literal meanings of the spoken words and utterances) was my second new contribution to the field of intelligibility.

The third contribution was related to context. The study was conducted in Iraq. To the best of the researcher's knowledge, there was no previous study which investigated the productive and perceptive intelligibility of Iraqi EFL learners. Thus, the present study could be a starting point for similar research in Iraq or to be replicated in other EFL contexts.

As far as new knowledge in methodology was concerned, the study suggested a research design which could be used to measure intelligibility at the formal phonetic (productive) level and at the meaning (perceptive) level. For this purpose, productive intelligibility was clearly defined to focus on the production of English speech sounds in accordance with the pronunciation rules set by Gimson's (2001) MGI. This entailed restricting the use of orthographic word transcription to measure this formal aspect of intelligibility. In a similar vein, perceptive intelligibility was defined in relation to meaning. This entailed defining perception to include phonetic, linguistic and meaning components and modifying Browne's (2016) and Cruz (2003) rating scales to measure the effect of accent familiarity on understanding. The outcome of such theoretical decisions was the development of a mixed methods research approach whose quantitative aspect consisted of a speech intelligibility test and the qualitative aspect consisted of a speaking task. The research design and its triangulation method aimed to achieve two purposes. First, the speech intelligibility test measured the overall productive and perceptive intelligibility of Iraqi EFL learners and determined which aspect of foreign accent and accent familiarity impeded intelligibility the most. Second, the speaking task identified the functional loads of pronunciation errors and the various communication strategies Iraqi EFL learners used to overcome pronunciation problems.

6.6. Limitations of the Study

The present study investigates the productive and perceptive intelligibility of Iraqi EFL learners in relation to foreign accent and accent familiarity, focusing on the segmental rather than suprasegmental aspect of phonology. In EFL contexts, most researchers highlight the importance of segmental over suprasegmental features to intelligibility. For example, Hellmuth (2014) states that segmental production is more important to intelligibility than suprasegmental in EFL contexts. Also, Jenkins (2000, 2009) emphasises that interaction in English among non-native English speakers in the expanding circles of English reflects the importance of segmental production to intelligibility. This emphasis on segmental phonology reflects the features which characterise careful speech in an EFL context. Such speech is devoid of connected speech processes and relies on the articulation of the segmental aspects of English pronunciation. Although acknowledging the primary effect of segmental features, it would have been more beneficial if some core prosodic features, such as stress, had been included in the investigation. Due to the nature of the study and time limits, prosodic features are excluded.

Furthermore, the findings and implications of the study are limited to English speech samples collected via a semi-direct speech data collection tool. Iraqi EFL speakers are not involved in actual face to face interaction in English. This limitation excludes the possibility of exploring meaning negotiation strategies, as used by Jenkins (2000), as a way of resolving intelligibility failures. In this study, the communication strategies used are investigated from the speaker's perspective only. Another limitation of the study is related to the analysis of the speakers' segmental phonemes. Initially, the researcher has plans to use acoustic phonetics as a method of analysis. However, the lack of technical resources and the difficulty of getting permission to use other universities' phonetic laboratories prevent me from carrying out such an analysis. The final limitation is related to the number of participants used in the study. Due to the inconvenient situation in Iraq, the investigation only focuses on EFL Iraqi learners at three colleges in Baghdad. Thus, it is recommended that a further investigation is carried out involving a larger sample of participants.

6.7. Suggestions for Further Research

Given the status of intelligibility pronunciation research in the Iraqi EFL context, the present study can be considered as a base upon which further investigations can be built. The following are several issues that future research can investigate:

1. On the basis that intelligibility emphasises understanding over accuracy, further investigation can be done to validate the list of segmental phonemic contrasts suggested by this investigation. This can be done by carrying out an intervention study using face to face interaction speech data.

2. The present study investigates intelligibility in the Iraqi EFL context. The findings are restricted to the Iraqi EFL context. Thus, there is a need for further investigation of intelligibility in other Arabic speaking contexts using Gimson's (2001) MGI as a reference pronunciation model.

3. As stated by Gonçalves and Silveira (2015:71), the available research findings "are too limited if one considers the many phonological features that have not been tested yet, and the existing cross-linguistic variation, which might affect communication." The present study investigates the effect of a foreign accent as a speaker characteristic and accent familiarity as a listener characteristic on the intelligibility of Iraqi EFL learners. It is recommended that further investigations are carried out to investigate the effect of other factors on the intelligibility of Iraqi EFL accented English.

6.8. Final Comment

Based on emphasising an intelligible pronunciation for Iraqi EFL learners, the study made contributions to the field of pronunciation both in Iraq and in the global context of English. In Iraq, the study could be considered a marked shift in pronunciation research and teaching to favour intelligibility over perfection in mastering the sound system of English. This new approach to study pronunciation led to the identification of phonemic contrasts different in nature from the ones identified by earlier studies. Such identification depended on the functional loads of such phonemic contrasts rather than their frequency of occurrence. Another marked shift triggered by the introduction of intelligibility was to emphasise studying the

factors which affected this new approach to pronunciation research. One such factor, in addition to foreign accent, was the effect of accent familiarity. Although important in understanding spoken English in its global context, the factor was completely ignored in the Iraqi context. For such global use of English, the study recommended that Iraqi EFL learners should be exposed to a variety of native and non-native English accents. The above changes culminated in the suggestion of an intelligibility pronunciation approach to the teaching of pronunciation to Iraqi EFL learners.

In the global context of English, the study contributed to existing research in several ways. First, it emphasised the integration between intelligibility and the functional load principle. Second, it revealed a close positive relationship between intelligibility defined in phonetic terms and intelligibility defined in relation to meaning. Third, it linked the use of communication strategies to pronunciation problems. The link between pronunciation and communication strategies could also be of help in overcoming the problem of what Jenkins (2000) termed fossilised pronunciation. In this respect, the speaker could resort to the use of an appropriate communication strategy when the pronunciation error would keep recurring no matter the amount of training the learner received. Fourth, the design of the study could be replicated in other EFL contexts. The replication of the study could investigate other issues related to intelligibility which might arise in other teaching contexts.

6.9. The researcher's Reflections

My journey with this research was motivated by a book on intelligibility written by Jenkins (2000) as well as my experience in teaching and learning English in Iraq. At that moment, I realised a huge gap in pronunciation studies conducted in Iraq and probably in certain other EFL contexts. Although the shift to intelligibility happened a long time ago, it was not introduced into the Iraqi EFL context. Further reading on the topic revealed that the topic was investigated from various perspectives, native and non-native. It also revealed that intelligibility needed to be clearly defined. At that point, I had to decide which path I should follow and I chose a native English speakers-based intelligibility approach. The main burden which I faced during my study was to define the term intelligibility and suggest a type of methodology to investigate it. Most intelligibility researchers confirmed that the term was vague and it meant different things to different researchers. Based on my comprehensive

reading of the literature, I chose to define intelligibility from the production and perception aspects restricting the first to the phonetic aspect of intelligibility and the second to the meaning aspect of intelligibility. This position required a relevant methodology to capture the two aspects of intelligibility.

The search for the methodology was another round of engaging with intelligibility. I had to make several decisions which culminated in adopting a mixed method research approach whose quantitative aspect consisted of a speech intelligibility test and the qualitative aspect consisted of a speaking task. All the efforts I made and the years spent were for the purpose of finding the best approach to the teaching of pronunciation and the use of English in its international context among native and non-native English speakers. As a pronunciation teacher, I should acknowledge that this research has a great impact on my thinking regarding the goal of teaching pronunciation. As confirmed by Gimson (2001), a good pronunciation model is one which is based on intelligibility with universal validity. In this respect, a good EFL learner is the one who is able to use English in its international context successfully. For this purpose, I investigated the productive and perceptive intelligibility of Iraqi EFL learners in relation to foreign accent and accent familiarity in an attempt to help such learners achieve the desired intelligibility performance level.

References

- Abercrombie, D. (1949). Teaching pronunciation. *ELT Journal*, 3(5), pp.113–122.
- Abercrombie, D. (1965). *Studies in Phonetics and Linguistics*. Oxford: Oxford University Press.
- Abercrombie, D. (1967). *Elements of General Phonetics*. Edinburgh: Edinburgh University Press.
- Abdul-Kareem, N. T. (2009). A survey study of the syllabuses of English used in Iraq (1873-2003 AD). *Diala Journal*, 34, pp.1-14.
- Abid, R. A. S. (2012). Investigating EFL Iraqi learners' beliefs about learning English as a foreign language. *ADAB AL-BASRAH*, (60), pp.46-81.
- Ahmed, M.S. (2000). An Investigation of the Factors Affecting the Production of the Segmental Phonemes of Iraqi EFL Learners' Interlanguage. PhD thesis, University of Baghdad, Iraq.
- Al-Abdely, A. and Yap, N. (2016). Learning English vowels by Iraqi EFL learners: perceived difficulty versus actual performance. *3L: Language, Linguistics, Literature®*, 22(1), pp. 1-18.
- Al-Abdely, A.A.W. and Thai, Y.N. (2016). The interrelation between the perception and production of English monophthongs by speakers of Iraqi Arabic. *Pertanika Journal of Social Sciences & Humanities*, 24, pp.1-9.
- Al-Ani, S. H. (1970). *Arabic Phonology: An Acoustical and Physiological Investigation*. The Hague: Mouton & Co. N. V.
- Al-Azzawi, M.B. and Barany, L.K.S. (2015). Teaching pronunciation: Revisited. *Arab World English Journal*, 6(4), pp.153-165.
- Albashir, A. (2008). Production and Perception of Libyan Arabic Vowels. PhD thesis, Newcastle University, UK.
- Al-Chalabi, S. (1976). Teaching English as a Foreign Language in Iraq with Emphasis on the In-service Training of Secondary School Teachers of English. MA thesis, University of Wales, UK.
- Al-Haeri, F. (1973). An Analysis of the Pronunciation Errors of the Girls Primary School Teachers in Baghdad. MA thesis, University of Baghdad, Iraq.
- Al-Hamash, K. I. (1969). *A Contrastive Study of the Sound System of Iraqi Arabic and Standard English*. Baghdad: Al-Sha'ab Press.
- Al-Hamash, K. I., & Abdul-Rahim, M. (1982). *Teaching English as Foreign Language*. Baghdad: Middle-East Printing Press.

Al-Hamash, K.I. (1984). *A survey of English Textbooks in Primary and Secondary Schools in Iraq*. Baghdad: IDETL publication.

Al-Hamdany, H.K.H. (2015). An Exploration of Perceptions and Applications of Spoken Register: Iraqi Students at a South Australian University. PhD thesis, University of Adelaide, Australia.

Al-Hilu, M. (2017). Complementing Behaviour in the Performance of Native Speakers of Irish English and Iraqi Arabic: A Cross Cultural Pragmatics Study. PhD thesis, University of Limerick, UK.

Al-Juwari, Z. (1997). Assimilation in Mosul Arabic and Standard English: A Contrastive Study. MA thesis, University of Mosul, Iraq.

Al-Owaidi, R. T. (2017). Investigating the Awareness of Iraqi EFL Learners of English Morphophonemic Derivations. PhD thesis, University of Baghdad, Iraq.

Algethami, G., Ingram, J. and Nguyen, T. (2010). The interlanguage speech intelligibility benefit: The case of Arabic-accented English. In *Proceedings of the 2nd Pronunciation in Second Language Learning and Teaching Conference*, 114, pp. 30-42.

Ali, E. M. T. (2013). Pronunciation problems: acoustic analysis of the English vowels produced by Sudanese learners of English. *International Journal of English and Literature*, 4(10), pp. 495-507.

Almbark, R. (2012). The Perception and Production of SSBE Vowels by Syrian Arabic Learners: The Foreign Language Model. PhD thesis, University of York, UK.

Alqahtani, M. (2013). Native speakers' model or English as Lingua Franca Core? An exploratory study investigating both issues in Arabic-speaking classrooms of English. *Arab World English Journal*, 4(1), pp. 150-158.

Alsiraih, W. (2013). Voice Quality Features in the Production of Pharyngeal Consonants by Iraqi Arabic Speakers. PhD thesis, Newcastle University, UK.

Altufaili, I.R. (2016). Education Policy and Practices of English as a Foreign Language (EFL) in Iraq. MA thesis, Missouri State University, USA.

Amer, F., Adaileh, A. and Rakhieh, A. (2011). Arabic diglossia. *Argumentum*, 7, pp.19-36.

Amin, M. Y. M. (2017). English Language Teaching Methods and Reforms in English Curriculum in Iraq: An Overview. *Journal of University of Human Development*, pp.578-583.

Anderson-Hsieh, J. (1995). Pronunciation factors affecting intelligibility in speakers of English as a foreign language. *Speak Out*, 16, pp.17-19.

Anderson-Hsieh, J. and Koehler, K. (1988). The effect of foreign accent and speaking rate on native speaker comprehension. *Language Learning*, 38(4), pp. 561-613.

- Atechi, S.N. (2004). The Intelligibility of Native and Non-native English Speech: A Comparative Analysis of Cameroon English and American and British English. PhD thesis.
- Aziz, Y.Y. (1974). Some problems of the English diphthongs for the Iraqi learner. *ELT Journal*, 29(1), pp.68-71.
- Bachman, L.F. and Palmer, A.S. (1996). *Language Testing in Practice*. Oxford: OUP.
- Bamgbose, A. (1998). Torn between the norms: innovations in world Englishes. *World Englishes*, 17(1), pp.1-14.
- Beinhoff, B. (2014). Perceiving intelligibility and accentedness in non-native speech: a look at proficiency levels. *Concordia Working Papers in Applied Linguistics*, 5, pp.58-72.
- Bell, A. (1978). Syllabic consonants. *Universals of Human Language*, 2, pp.153–201.
- Bell, J. (2005). *Doing your Research Project: A Guide for First-Time Researchers in Education, Health and Social Science*. 4th ed. London: Open University Press.
- Bent, T. and Bradlow, A.R. (2003). The interlanguage speech intelligibility benefit. *The Journal of the Acoustical Society of America*, 114(3), pp.1600-1610.
- Bent, T., Bradlow, A. R. and Smith, B. L. (2007). Segmental errors in different word positions and their effects on intelligibility of non-native speech: All's well that begins well. In O-S. Bohn and M. J. Munro (eds.) *Language Experience in Second Language Speech Learning: In honour of James Emil Flege*. Amsterdam: John Benjamin. pp. 331-347.
- Best, C. (1995). A direct realist view of cross-language speech perception. In Winifred Strange (Ed.). *Speech Perception and Linguistic Experience: Issues in Cross-Language Research*, pp. 171-206. Baltimore: York Press.
- Blumstein, S.E. and Stevens, K.N. (1980). Perceptual invariance and onset spectra for stop consonants in different vowel environments. *The Journal of the Acoustical Society of America*, 67(2), pp.648-662.
- Bogorevich, V. (2018). Native and Non-native Raters of L2 Speaking Performance: Accent Familiarity and Cognitive Processes. PhD thesis, Northern Arizona University, USA.
- Bolton, K. and Kachru, B.B. eds. (2006). *World Englishes: critical concepts in linguistics. Vol.1*. London: Routledge.
- Bradlow, A.R. and Bent, T. (2008). Perceptual adaptation to non-native speech. *Cognition*, 106(2), pp.707-729.
- Brinton, D., and Goodwin, J. (1996). *Teaching Pronunciation: A Reference for Teachers of English to Speakers of other Languages*. Cambridge: Cambridge University Press.
- Brown, A. (1988). Functional load and the teaching of pronunciation. *TESOL Quarterly*, 22(4), pp.593-606.

Brown, A. (1995). Minimal pairs: minimal importance? *ELT Journal* *ELT Journal*, 49(2), pp.169–175.

Brown, H.D. (2002). English language teaching in the “post-method” era: toward better diagnosis, treatment, and assessment. In Richards, J. C. and Renandya, W.A. (eds) *Methodology in Language Teaching*. Cambridge: Cambridge University Press. Pp. 5-8.

Brown, E. (2013). Native and non-native English-speaking ESL/EFL teachers in Sweden: A study on students’ attitudes and perceptions towards the teaching behaviour of native and non-native English-speaking teachers. *English C*, pp. 61-90.

Brown, H.D. (2007). *Principles of Language Learning and Teaching*. New York: Pearson Education.

Browne, K. and Fulcher, G. (2016). Pronunciation and intelligibility in assessing spoken fluency. In Isaacs, T. and Trofimovich, P. (eds.), *Second Language Pronunciation Assessment: Interdisciplinary Perspectives*. Bristol: Multilingual Matters, pp.37-53.

Browne, K.C. (2016). Raters’ Accent Familiarity Levels and their Effects on Pronunciation Scores and Intelligibility on High-Stakes English Tests. PhD thesis, University of Leicester, UK.

Bryman, A. (2008). *Social Research Methods*. 3rd ed. Oxford: Oxford University Press.

Burgess, J., & Spencer, S. (2000). Phonology and pronunciation in integrated language teaching and teacher education. *System*, 28(2), pp.191-215.

Canale, M. (1983). From communicative competence to communicative language pedagogy. In J. C. Richards & R. Schmidt (Eds.), *Language and communication* (pp. 2-27). London: Longman.

Carey, M.D., Mannell, R.H. and Dunn, P.K. (2011). Does a rater’s familiarity with a candidate’s pronunciation affect the rating in oral proficiency interviews? *Language Testing*, 28(2), pp.201-219.

Catford, J.C. (1950). Intelligibility. *ELT Journal*, 1(1), pp.7-15.

Catford, J.C. (1977). *Fundamental Problems in Phonetics*. Edinburgh: Edinburgh University Press.

Cavalheiro, L.L. (2015). English as a Lingua Franca: Bridging the Gap between Theory and Practice in English Language Teaching. PhD Thesis, University of Lisbon, Portugal.

Celce-Murcia, M., Brinton, D. M. and Goodwin, J. M. (2010). *Teaching Pronunciation: A Reference for Teachers of English to Speakers of Other Languages*. Cambridge: Cambridge University Press.

Cho, J.Y. and Lee, E.H. (2014). Reducing confusion about grounded theory and qualitative content analysis: Similarities and differences. *The Qualitative Report*, 19(32), pp.1-20.

Clark, J.L.D. (1979). Direct vs. semi-direct tests of speaking proficiency. In: E.J. Briere and F.B. Hinofotis (eds.), *Concepts in Language Testing: Some Recent Studies*, pp.35-49. Washington DC.

Cohen, L., Manion, L., Morrison, K. and Bell, R. (2007). *Research Methods in Education*. 7th ed. London: Routledge.

Cooper, A. and Bradlow, A.R. (2016). Linguistically guided adaptation to foreign-accented speech. *The Journal of the Acoustical Society of America*, 140(5), pp. 378–384.

Corder, S.P. (1967). The significance of learner's errors. *IRAL-International Review of Applied Linguistics in Language Teaching*, 5(1-4), pp.161–170.

Creswell, J.W. et al. (2003). Advanced mixed methods research designs. In: Tashakkori, A. and Teddlie C.(eds.), *Handbook of Mixed Methods in Social and Behavioural Research*. Thousand Oaks, CA: Sage, pp. 209-240.

Creswell, J.W., Plano Clark, V. L. (2007). *Designing and Conducting Mixed Methods Research*. Thousand Oaks, CA: Sage.

Creswell, J. W., & Plano-Clark, V. L. (2003). Choosing a mixed methods design. In J. W. Creswell & V. L. Plano-Clark, *Designing and Conducting Mixed Methods Research* (pp. 53–106). Thousand Oaks, CA: Sage.

Cruttenden, A. (2014). *Gimson's Pronunciation of English*. London: Routledge.

Cruz, N. (2003). An exploratory study of pronunciation intelligibility in the Brazilian learner's English. *The ESPecialist*, 24, pp.155–175.

Cruz-Ferreira, M. (2006). *Three is a Crowd? Acquiring Portuguese in a Trilingual Environment*. Clevedon: Multilingual Matters.

Cruz, N.C. (2007). Terminologies and definitions in the use of intelligibility: state-of-the-art. *Revista Brasileira de Linguística Aplicada*, 7(1), pp.149–159.

Crystal, D. and Varley, R.A. (1998). *Introduction to Language Pathology*. London: Edward Arnold.

Crystal, D. (2003). *English as a Global Language*. Cambridge: Cambridge University Press.

Crystal, D. (2008). *A Dictionary of Linguistics and Phonetics*. Malden: Blackwell publishing.

Dalton, C., and B. Seidlhofer. (2001). *Pronunciation*. Oxford: Oxford University Press.

Davies, A. (2003). *The Native Speaker: Myth and Reality*. UK: Multilingual Matters Ltd.

de Bot, K., Lowie, W. and Verspoor, M. (2005). *Second Language Acquisition: An Advanced Resource Book*. London: Routledge.

Derwing, T.M. and Munro, M.J. (2005). Second language accent and pronunciation teaching: A research-based approach. *TESOL Quarterly*, 39(3), pp.379-397.

Derwing, T.M. and Munro, M.J. (2009). Putting accent in its place: Rethinking obstacles to communication. *Language Teaching*, 42(4), pp.476-490.

Deterding, D. and Kirkpatrick, A. (2006). Emerging South-East Asian Englishes and intelligibility. *World Englishes*, 25(3-4), pp.391-409.

Deterding, D. (2006). The North Wind versus a Wolf: short texts for the description and measurement of English pronunciation. *Journal of the International Phonetic Association*, 36(2), pp.187-196.

De Vos. (2002). The place of theory and the literature review in the qualitative approach to research. *The Social Sciences and Human Service Professions*, (17), pp. 265-269.

Diehl, R.L., Lindblom, B., Hoemeke, K.A. and Fahey, R.P. (1996). On explaining certain male-female differences in the phonetic realization of vowel categories. *Journal of Phonetics*, 24(2), pp.187-208.

Dörnyei, Z. (2007). *Research Methods in Applied Linguistics*. Oxford: Oxford University Press.

Dörnyei, Z., & Scott, M. L. (1995, March). Communication strategies: an empirical analysis with retrospection. In *Deseret Language and Linguistic Society Symposium* 21(1), pp. 137-150.

Dziubalska-Kołaczyk, K. and Przedlacka, J. (2008). *English Pronunciation Models: A Changing Scene* (vol.21). Peter Lang.

Efstathiadis, S. (1993). *A Survey in FLT Methodology*. Thessaloniki, Greece: University Studio Press.

Ellis, R. (1985). *Understanding Second Language Acquisition*. Oxford: Oxford University Press.

Ezza, E. Y. (2013). Scaffolding pronunciation in Saudi EFL classroom at Majma'ah University. *International Journal of Applied Linguistics & English Literature*, 2(3), pp. 62-68

Faerch, C. and G. Kasper. (1983). Plans and strategies in foreign language communication. In C. Faerch and G. Kasper (eds.) *Strategies in Interlanguage Communication* (eds.). London: Longman.

Fethi, B. (2017). On the Relationship Between Teaching Pronunciation and Teaching Speaking: From Technicality to Fluency: Case of First-Year LMD EFL Students. PhD Thesis. Algeria.

Field, A.P. (2013). *Discovering Statistics Using IBM SPSS Statistics: and Sex and Drugs and Rock 'n' Roll*. 4th edition ed. Los Angeles: Sage.

Field, J. (2005). Intelligibility and the listener: the role of lexical stress. *TESOL Quarterly*, 39(3), pp.399–423.

Firth, A. (1996). The discursive accomplishment of normality: on "lingua franca" English and conversation analysis. *Journal of Pragmatics*, 26, 237-259.

Flege, J. E. (1995). Second-language speech learning: theory, findings, and problems. In W. Strange (Ed.), *Speech Perception and Linguistic Experience: Theoretical and Methodological Issues*, pp. 229 –273. Timonium, MD: York Press.

Fleming, D.N. (1977). A Study of the Interlanguage of English-Speaking Learners of Spanish. PhD thesis, University of Massachusetts.

Fraser, H. (2000). *Coordinating Improvements in Pronunciation Teaching for Adult Learners of English as a Second Language*. Canberra, Australia: University of New England.

Franklin Thambi, J. S. (2016). *A Handbook of Linguistics*. New Delhi: Education.

Fries, C. (1945). *Teaching and Learning English as a Foreign Language*. Ann Arbor: University of Michigan.

Fowler, Carol A. & Bruno Balantucci. (2005). The relation of speech perception and speech production. In David B. P. & Robert E. Remez (eds.) *The Handbook of Speech Perception*, pp. 633–652. Malden, MA & Oxford: Blackwell.

Fulcher, G. (2003). *Testing Second Language Speaking*. London: Pearson Education Limited.

Gass, S. and Varonis, E.M. (1984). The effect of familiarity on the comprehensibility of non-native speech. *Language Learning*, 34(1), pp.65–87.

Gass, S.M. and Selinker, L. (2008). *Second Language Acquisition: An Introductory Course*. London: Routledge.

Ghalib, G.B.M. (1984). An Experimental Study of Consonant Gemination in Iraqi Colloquial Arabic. PhD thesis, University of Leeds, UK.

Gilbert, J. B. (2008). *Teaching Pronunciation Using the Prosody Pyramid*. Cambridge: Cambridge University Press.

Gilner, L., & Morales, F. (2010). Functional load: transcription and analysis of the 10,000 most frequent words in spoken English. *The Buckingham Journal of Language and Linguistics*, 3, pp.135-162.

Gimson, A.C. (2001). *An Introduction to the Pronunciation of English*. 6th ed. Revised by A. Cruttenden. London: Edward Arnold.

Golombek, P. and Jordan, S.R. (2005). Becoming "black lambs" not "parrots": A poststructuralist orientation to intelligibility and identity. *TESOL Quarterly*, 39(3), pp.513–533.

Gonçalves, A.R. and Silveira, R. (2015). Intelligibility research in Brazil: empirical findings and methodological issues. *Revista Horizontes de Linguística Aplicada*, 14(1), pp.51-81.

Gulanowski, J. (2011). Qualitative content analysis. Analysis of web-portals exemplified by the analysis of Polish conservative web-portals (Konserwatyzm. pl and Legitymizm). *Methods and Techniques of Cyberspace Research Theory and Practice*, p.41.

Graddol, D. (2006). *English Next* (Vol. 62). London: British Council.

Gratton, C. and Jones, S. (2004). *Research Methods for Sport Studies*. London: Routledge.

Groom, C. (2012). Non-native attitudes towards teaching English as a lingua franca in Europe. *English Today*, 28(1), pp.50-57.

Hahn, L.D. (2004). Primary stress and intelligibility: research to motivate the teaching of suprasegmentals. *TESOL Quarterly*, 38(2), pp.201-223.

Hardman, J.B. (2010). The Intelligibility of Chinese-Accented English to International and American Students at a US University. PhD thesis, The Ohio State University, USA.

Hassan, Z.M. (1981). An Experimental Study of Vowel Duration in Iraqi Spoken Arabic. PhD thesis, University of Leeds, UK.

Hassan, E. M. I. (2014). Pronunciation problems: A case study of English language students at Sudan University of Science and Technology. *English Language and Literature Studies*, 4(4), p.31.

Hellmuth, S. (2014). Towards a research-led approach to the teaching of Arabic pronunciation. In *Proceedings of the International Symposium on the Acquisition of Second Language Speech Concordia Working Papers in Applied Linguistics*, 5, pp. 295-309.

Hismanoglu, M., & Hismanoglu, S. (2010). Language teachers' preferences of pronunciation teaching techniques: Traditional or modern. *Procedia Social and Behavioural Sciences*, 2, pp.983-989.

Hock, H.H. (1986). *Principles of Historical Linguistics*. Berlin: Mouton de Gruyter.

Holland, L. (2016). A Study of the Intelligibility, Comprehensibility and Interpretability of Standard Marine Communication Phrases as Perceived by Chinese Mariners. MA thesis, Portland State University, USA.

Holmes, J. and Wilson, N. (2017). *An Introduction to Sociolinguistics*. London: Routledge.

Hongyan Wang and van Heuven, V.J. (2015). The interlanguage speech intelligibility benefit as bias toward native-language phonology. *i-Perception*, 6(6), pp.1-13.

Howe, K. (1992). Getting over the quantitative-qualitative debate. *Journal of Education*, 100(2), pp.236-256.

Hsieh, H.F. and Shannon, S.E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research*, 15(9), pp.1277-1288.

Huwari, I. F., & Mehawesh, M. (2015). Review of the importance of teaching pronunciation in the Arab society. *International Journal on Studies in English Language and Literature (IJSELL)*, 3(6), pp.31-37.

Imai, S.; Walley, A. & Flege, J. (2005). Lexical frequency and neighbourhood density effects on the recognition of native and Spanish-accented words by native English and Spanish listeners. *The Journal of the Acoustical Society of America*, 117, PP. 896-907.

Issa, J. H., & Jamil, H. (2010). Overview of the education system in contemporary Iraq. *European Journal of Social Sciences*, 14(3), pp. 360-386.

Isaacs, T. and Trofimovich, P. eds. (2016). *Second Language Pronunciation Assessment: Interdisciplinary Perspectives*. Bristol: Multilingual Matters.

Jaber, M. and Hussein, R.F. (2011). Native speakers' perception of non-native English speech. *English Language Teaching*, 4(4), pp.77-87.

James, C. (2014). *Errors in Language Learning and Use: Exploring Error Analysis*. London: Routledge.

Jastrow, O. (1994). The Qeltu dialects of Mesopotamian Arabic. In *Actas del Congreso Internacional sobre interferencias lingüísticas arabo-romances y paralelos extra-iberos*. pp.119–123.

Jenkins, J. (2000). *The Phonology of English as an International Language: New Models, New Norms, New Goals*. Oxford: Oxford University Press.

Jenkins, J. (2002). A sociolinguistically based, empirically researched pronunciation syllabus for English as an international language. *Applied Linguistics*, 23(1), pp.83–103.

Jenkins, J. (2003). *World Englishes: A Resource Book for Students*. London: Routledge.

Jenkins, J. (2005) Teaching pronunciation for English as a Lingua Franca: a socio-political perspective. In Gnutzmann, C. and Intemann, F. (eds.) *The Globalization of English and the English Language Classroom*. Oxford: Oxford University Press.

Jenkins, J. (2006). Current perspectives on teaching World Englishes and English as a Lingua Franca. *TESOL Quarterly*, 40(1), pp.157–181.

Jenkins, J. (2006b). English pronunciation and second language speaker identity. *The sociolinguistics of identity*, pp.75–91.

Jenkins, J. (2007). *English as a Lingua Franca: Attitude and Identity*. Oxford University Press.

Jenkins, J. (2009). English as a Lingua Franca: interpretations and attitudes. *World Englishes*, 28(2), pp.200–207.

Jenkins, J. (2017). The future of English as a Lingua Franca? In *The Routledge handbook of English as a lingua franca*, pp. 594-605. London: Routledge.

Jenkins J., Leung C. (2017) Assessing English as a Lingua Franca. In: Shohamy E., Or I., May S. (eds) *Language Testing and Assessment. Encyclopaedia of Language and Education*, pp.103-117. (3rd ed.). Cham: Springer.

Johnson, R. and Onwuegbuzie, A. (2004) Mixed-methods research: a research paradigm whose time has come. *Educational Research*, 33(7), pp.14-26.

Jones, R. H. 2002. Beyond 'listen and repeat': pronunciation teaching materials and theories of second language acquisition. In Richards, J. C. and Renandya, W. A. (eds) *Methodology in Language Teaching*. Cambridge: Cambridge University Press. pp.178-187.

Kashiwagi, A. and Snyder, M. (2008). American and Japanese listener assessment of Japanese EFL speech: Pronunciation features affecting intelligibility. *The Journal of AsiaTEFL*, 5(4), pp.27-47.

Kachru, B. (1985) Standards, codification and sociolinguist realism: the English language in the Outer Circle. In Quirk, R. and Widdowson, H. (eds.) *English in the World: Teaching and Learning the Language and Literature*. Cambridge: Cambridge University Press.

Kachru, B. B. (1985b) Institutionalized second language varieties. In S. Greenbaum (ed.), *The English Language Today* (pp. 211–226). Oxford: Pergamon Press.

Kachru, B. (1986) *The Alchemy of English: The Spread, Functions and Models of Non-Native Englishes*. Oxford: Pergamon Press.

Kachru, B. B. (1992). World Englishes: Approaches, issues and resources. *Language teaching*, 25(1), pp.1-14.

Kachru, B.B. (2005). *Asian Englishes: Beyond the Canon*. Hong Kong: University Press.

Kachru, Y. and Nelson, C.L. (1996). *World Englishes in Asian Contexts* (Vol. 1). Hong Kong: University Press.

Kanellou, V. (2011). The place and practice of pronunciation teaching in the context of the EFL classroom in Thessaloniki, Greece. PhD thesis, Cardiff University, UK.

Kaur, P. and Singh, P.K. (2009). Phonological Intelligibility: A Study of Malay and Chinese Learners of English in Malaysia. PhD thesis, National University of Singapore, Singapore.

Kennedy, S. and Trofimovich, P. (2008). Intelligibility, comprehensibility, and accentedness of L2 speech: The role of listener experience and semantic context. *Canadian Modern Language Review*, 64, pp.459–490.

Kenworthy, J. (1987). *Teaching English pronunciation*. London; New York: Longman.

Kharm, N. and Hajjaj, A. (1989). *Errors in English among Arabic Speakers: Analysis and Remedy*. London: Longman.

Khudhair, H.J. (2015). The role of accurate pronunciation in determining intelligibility of speech. *Al-Jam'ah Al-Iraqia*, 31(1), pp. 501-522.

Kim, T. (2008). Accentedness, comprehensibility, intelligibility, and interpretability of NNESTs. *CATESOL Journal*, 20(1), pp.7–26.

Kim, Y.-H. (2009). An investigation into native and non-native teachers' judgments of oral English performance: A mixed methods approach. *Language Testing*, 26(2), pp.187–217.

King, R.D. (1967). Functional load and sound change. *Language*, 43(4), pp.831–852.

Kirkova-Naskova, A. (2010). Native speaker perceptions of accented speech: The English pronunciation of Macedonian EFL learners. *Research in Language*, 8, pp.1–21.

Kirkpatrick, A. (2007) *World Englishes: Implications for International Communication and English Language Teaching*. Cambridge: Cambridge University Press.

Kirkpatrick, A., Deterding, D., & Wong, J. (2008). The international intelligibility of Hong Kong English. *World Englishes*, 27(3/4), 359-377.

Kirkpatrick, A. (2011). English as an Asian lingua franca and the multilingual model of ELT. *Language Teaching*, 44(2), pp.212–224.

Kongsom, T. (2009). The Effects of Teaching Communication Strategies on Thai Learners of English. PhD thesis, University of Southampton, UK.

Krashen, S. (1980). The theoretical and practical relevance of simple codes. In T. Scarcella and S. Krashen. (eds.), *Research on Second Language Acquisition*, pp. 7-18. Rowley: Newbury House.

Krebt, M. (2010). An Assessment of Oral Communication Strategies Used by Iraqi EFL Teachers and Students at Intermediate Schools. MA thesis, University of Baghdad, Iraq.

Krippendorff, K. (2004). *Content Analysis: An Introduction to Its Methodology*. CA: Sage Publications, Inc.

Kuhl, P.K. (1991). Human adults and human infants show a 'perceptual magnet effect' for the prototypes of speech categories, monkeys do not. *Perception & Psychophysics*, 50, p.93–107.

Kuhl, P.K., & Iverson, P. (1995). Linguistic experience and the "Perceptual Magnet Effect." In Strange, W. (ed.), *Speech Perception and Linguistic Experience: Issues in Cross-Language Research*. York: York Press, pp.121-154.

Ladefoged, P. (2005). *Vowels and Consonants: an Introduction to the Sounds of Languages*. Malden, MA: Blackwell Pub.

Ladegaard, H.J. (1998). National stereotypes and language attitudes: the perception of British, American and Australian language and culture in Denmark. *Language & Communication*, 18(4), pp.251–274.

Lado, R. (1957). *Linguistics Across Cultures*. Ann Arbor: Michigan University Press.

Larsen-Freeman, D., & Long, M. H. (1991). *An Introduction to Second Language Acquisition Research*. New York: Longman Group UK Limited.

Larsen-Freeman, D. (2000). *Techniques and Principles in Language Teaching* (2nd Ed.). New York: Oxford University Press.

Laver, J. (1970). The production of speech. *New Horizons in Linguistics*, 53, p.77.

Levis, J.M. (2005). Changing contexts and shifting paradigms in pronunciation teaching. *TESOL Quarterly*, 39(3), pp.369–377.

Levis, J.M. (2016). Research into practice: how research appears in pronunciation teaching materials. *Language Teaching*, 49(03), pp.423–437.

Levis, J. M. (2018). *Intelligibility, oral communication, and the teaching of pronunciation*. Cambridge: Cambridge University Press.

Liberman, A.M., Cooper, F.S., Shankweiler, D.P. and Studdert-Kennedy, M. (1967). Perception of the speech code. *Psychological Review*, 74(6), pp.431–461.

Liberman, A.M. and Mattingly, I.G. (1985). The motor theory of speech perception revised. *Cognition*, 21(1), pp.1–36.

Littlewood, W. (1984). *Foreign and Second Language Learning: Language Acquisition Research and its Implications for the Classroom*. Cambridge: Cambridge University Press.

Löfqvist, A. (1997). Theories and models of speech production. In W. J. Hardcastle and J. Laver. (eds.), *The Handbook of Phonetic Sciences*. Oxford: Blackwell, pp. 405–426.

Ludwig, A. (2012). Interlanguage Speech Intelligibility Benefit for Non-native Listeners of English. MA thesis, Universtitat de Barcelona, Spain.

Lund, K. (2003). Age and accent. *Sprogforum*, 26, pp.9–17.

Mahud, I. (1998). Syllabic Consonants in English and Arabic. PhD thesis, University of Baghdad, Iraq.

Malmberg, B. (1963). *Phonetics*. New York: Dover Publications.

Malovrh, P.A. (2014). Variability and Systematicity in Interlanguage Development: An Analysis of Mode and its Effect on L2 Spanish Morphology. *Studies in Hispanic & Lusophone Linguistics*, 7(1), pp.43–78.

Marks, J. (2007). *English Pronunciation in Use Elementary Book with Answers, with Audio*. Cambridge: Cambridge University Press.

Meurs, W. Van and Hendriks, B. (2017) Native and non-native listeners' evaluation of degrees of foreign accentedness in English: A literature review. *Van Schoolstot Scriptie III*, pp.102-111.

Minematsu, N., Kasahara, S., Makino, T., Saito, D. and Hirose, K. (2014). Speaker-basis accent clustering using invariant structure analysis and the speech accent archive. *Proc. Odyssey*, pp.158-165.

Miller, F. S. (2004). Pronunciation and the Adult ESL Learner. *Fieldnotes for ABLE Staff*.

Mitchell, T.F. (1990). *Pronouncing Arabic*. Oxford: Clarendon Press.

Morley, J. (1991). The pronunciation component in teaching English to speakers of other languages. *TESOL Quarterly*, 25(3), pp.481-520.

Morley, J. (2000). The pronunciation component in teaching English to speakers of other languages. In D. R. H. Byrd, N. Bailey & M. R. Gitterman (Eds). *Landmarks of American Language and Linguistics (Vol. 2)*, (pp. 98-121). Washington D.C.: Office of English Language Programs.

Korstjens, I., and Moser, A. (2018). Series: Practical guidance to qualitative research. Part 3: Sampling, data collection and analysis. *European Journal of General Practice*, 24(1), 9-18.

Moyer, A. (2013). *Foreign Accent: The Phenomenon of Non-native Speech*. Cambridge: Cambridge University Press.

Munro, M.J. and Derwing, T.M. (1995). Foreign accent, comprehensibility, and intelligibility in the speech of second language learners. *Language Learning*, 45(1), pp.73-97.

Munro, M.J. (2008). Foreign accent and speech intelligibility. In J.G. Hansen Edwards and M.L. Zampini. (eds.), *Phonology and Second Language Acquisition*, pp.193–218. Philadelphia: John B.

Munro, M.J. and Derwing, T.M. (2006). The functional load principle in ESL pronunciation instruction: an exploratory study. *System*, 34(4), pp.520–531.

Munro, M.J., Derwing, T.M. and Morton, S.L. (2006). The mutual intelligibility of L2 speech. *Studies in Second Language Acquisition*, 28(1), pp.111-131.

Munro, M.J. (2008). Foreign accent and speech intelligibility. *Phonology and Second Language Acquisition*, pp.193-218.

Munro, M.J. and Derwing, T.M. (2011). The foundations of accent and intelligibility in pronunciation research. *Language Teaching*, 44(03), pp.316–327.

- Munyandamutsa, J.B. (2005). Study of the Rwandan Learners' Intelligibility in Spoken English. PhD thesis, Cardiff University, UK.
- Murphy, J. (2003). Pronunciation. In D. Nunan (Eds.). *Practical English Language Teaching* (111–128). Boston: McGraw-Hill.
- Nasr, R.T. (1963). *The Teaching of English to Arab Students*. London: Longman.
- Nelson, C.L. (1995). Intelligibility and world Englishes in the classroom. *World Englishes*, 14(2), p.273-279.
- Nearey, T.M. (1989). Static, dynamic, and relational properties in vowel perception. *The Journal of the Acoustical Society of America*, 85(5), pp.2088-2113.
- Neuman, W. (2006) *Social Research Methods: Qualitative and Quantitative Approaches*. Boston: Allyn and Bacon.
- Nikolova, A. (2012). L1 Interference in the Perception and Production of English Vowels by Arabic Speakers. PhD thesis, San Diego, USA.
- Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic Analysis: Striving to Meet the Trustworthiness Criteria. *International Journal of Qualitative Methods*, 16 (1), pp. 1-13.
- Nunan, D. (2003). *Practical English. Language Teaching*. New York: Mc Graw Hill.
- O'Connor, J.D. (1980). *Better English Pronunciation*. 2nd edition. Cambridge: Cambridge University Press
- O'Connor, J.D. and Fletcher, C. (1989). *Sounds English: A Pronunciation Practice Book*. London: Longman
- Oller, J.W. and Ziahosseiny, S.M. (1970). The contrastive analysis hypothesis and spelling errors. *Language Learning*, 20(2), pp.183–189.
- Pennington, M., and J. Richards. 1986. Pronunciation Revisited. *TESOL Quarterly*, 20(2): pp. 207-225.
- Perkell, J.S. (1990). Testing theories of speech production: Implications of some detailed analyses of variable articulatory data. In *Speech Production and Speech Modelling*. Springer, pp.263–288.
- Pierrehumbert, J. (2001). Exemplar dynamics: Word frequency, lenition and contrast. In Bybee, J. and Hopper, P. (eds), *Frequency and the Emergence of Linguistic Structure*. Amsterdam: John Benjamins Publishing Company, p.137-57.
- Pinker, S. (1994) *The language Instinct: The New Science of Language and Mind*. London: Penguin.

- Punch, K. (2005) *Introduction to Social Research*. London: Longman.
- Quirk, R. (1990). Language varieties and standard language. *English Today*, 6(01), p.3.
- Rahim, A.J. (1980). The Phonology of Spoken Iraqi Arabic from the Functional Point of View. PhD Thesis, University of Leeds, UK.
- Rahman, K.F., and Yeasmin, S. (2012). 'Triangulation' research method as the tool of social science research. *BUP journal*, 1(1), pp.154-163.
- Rajadurai, J. (2004). Speaking "Malaysian English": Sociolinguistic Perspectives of Phonological Variation. PhD thesis, University of Nottingham, Nottingham.
- Rajadurai, J. (2007). Intelligibility studies: a consideration of empirical and ideological issues. *World Englishes*, 26(1), p.87-98.
- Rashid, B. (2009). Phonological intelligibility in Iraqi EFL classrooms. *Journal of Basrah Researches (Humanities Series) Yr*, 48(4), pp.43–73.
- Rashid, B. (2011). Foreign language accents and EFL learners' attitudes. *Journal of Basrah Researches (Humanities Series) Yr*, 36(4), pp.58–80.
- Rahmani, D., & Najjari, H. (2013). Communication Strategies Revisited: Looking beyond Interactional and Psycholinguistic Perspectives. *The Journal of Applied Linguistics*, 12(6), pp.61-81.
- Richards, J. C. and Rodgers, T. S. 2001. *Approaches and Methods in Language Teaching*. 2nd edition. Cambridge: Cambridge University Press
- Richards, J.C. (2015). *Error Analysis: Perspectives on Second Language Acquisition*. London: Routledge.
- Roach, P. (2009) *English Phonetics and Phonology: A Practical Course*. Cambridge: Cambridge University Press.
- Roca, I. and Johnson, W. (1999). *A Course in Phonology*. Wiley-Blackwell.
- Rogers, C. L. (1997) Intelligibility of Chinese-Accented English. PhD thesis, Indiana University, USA.
- Rubin, J. (1994). A review of second language listening comprehension research. *The modern language journal*, 78(2), pp.199–221.
- Ryalls, J.H. (1996). *A Basic Introduction to Speech Perception (Cultural Heritage and Contemporary Change)*. San Diego: Singular.
- Saadah, E. (2011). The Production of Arabic Vowels by English L2 Learners and Heritage Speakers of Arabic. PhD thesis, University of Illinois at Urbana-Champaign, USA.

Saito, K. (2007). The influence of explicit phonetic instruction on pronunciation in EFL settings: The case of English vowels and Japanese learners of English. *The Linguistics Journal*, 3(3), pp.16–40.

Saito, A. (2012). Is English our lingua franca or the native speaker's property? The native speaker orientation among middle school students in Japan. *Journal of Language Teaching and Research*, 3(6), pp.1071-1081.

Saito, K., Webb, S., Trofimovich, P. and Isaacs, T. (2016). Lexical correlates of comprehensibility versus accentedness in second language speech. *Bilingualism: Language and Cognition*, 19(03), pp.597–609.

Saville-Troike, M. 2006. *Introducing Second Language Acquisition*. Cambridge: Cambridge University Press.

Schoener, R.S. (2015). Non-native Prosody and the Intelligibility of Ambiguous Utterances. MA thesis, Harvard Extension School.

Seidlhofer, B. (2004). 10. Research perspectives on teaching English as a Lingua Franca. *Annual Review of Applied Linguistics*, 24, pp.209–239.

Selinker, L. (1972). Interlanguage. *IRAL-International Review of Applied Linguistics in Language Teaching*, 10(1–4), pp.209–232.

Sereno, J., Lammers, L. and Jongman, A. (2016). The relative contribution of segments and intonation to the perception of foreign-accented speech. *Applied Psycholinguistics*, 37(02), pp.303–322.

Shaymaa, Y. T. (2015). A phonological analysis of segmental phonemes in Standard English. *Alustath*, 1(215), pp.73-86.

Schreier, M. (2012). *Qualitative content analysis in practice*. Los Angeles: Sage.

Shenton, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information*, 22(2004), 63-75.

Simpson, J. (1994). "Accent". In R. Asher (ed) *Encyclopaedia of language and linguistics*. Oxford: Pergamon, pp. 8-12.

Silverman, D. (2006) *Interpreting Qualitative Data: Methods for Analysing Talk, Text and Interaction*. London: Sage.

Skold, L. (2008). Spoken English in the EFL classroom: A study of Swedish pupils' attitudes towards spoken English. Karlstad: Karlstad University Press.

Smith, B. (2001). Arabic speakers. In M. Swan & B. Smith eds. *Learner English: A Teacher's Guide to Interference and other Problems*, pp. 195-213. Cambridge: Cambridge University Press

- Smith, L.E. and Nelson, C.L. (1985). International intelligibility of English: directions and resources. *World Englishes*, 4(3), p.333-342.
- Smith, L.E. (1987). Language spread and issues of intelligibility. *Georgetown University Round Table on Languages and Linguistics*, pp.250-64.
- Smith, L. and Nelson, C. (2008). International intelligibility of English: directions and Resources. *World Englishes*, 4(3), pp. 333-342.
- Smith, L.E., & Rafiqzad, K. (1979). English for cross-cultural communication: The question of intelligibility. *TESOL Quarterly*, 13(3), pp.371-380.
- Somsai, S., & Intaraprasert, C. (2011). Strategies for coping with face-to-face oral communication problems employed by Thai university students majoring in English. *GEMA Online® Journal of Language Studies*, 11(3).
- Strange, W. (1989). Evolving theories of vowel perception. *The Journal of the Acoustical Society of America*, 85(5), pp.2081-2087.
- Tajeldin Ali, E.M. (2011). *Speech Intelligibility Problems of Sudanese Learners of English: an Experimental Approach*. Utrecht: LOT.
- Tarone, E. (1977). Conscious communication strategies in interlanguage. *TESOL*, 77, PP.194-203.
- Tarone, E. (1981). Some thoughts on the notion of communication strategy. *TESOL Quarterly*, 15, pp. 285-95.
- Tarone, E. (1987) The Phonology of interlanguage. In Loup, G. and Weinberger, S. (eds.) *Interlanguage Phonology: The Acquisition of a Second Language Sound System*. Cambridge: Newbury House Publishers.
- Tatham, M. and Morton, K. (2006). *Speech Production and Perception*. Springer.
- Taylor, L. and Galaczi, E. (2011). *Examining Speaking: Research and Practice in Assessing Second Language Speaking*. Cambridge: Cambridge University Press.
- Tench, P. (1981). *Pronunciation Skills*. London: Macmillan.
- Tench, P. (1996). Methodology in phonological interlanguage. *IRAL-International Review of Applied Linguistics in Language Teaching*, 34(4), pp.241–260.
- Tiffen, B.W. (1974). The Intelligibility of Nigerian English. PhD thesis, University College London, UK.
- Tiffen, B. (1976). Notes for English vowels and diphthongs for Arabic speakers. *IDELT*, 7, pp24-33.
- Trask, L. (1997). *A Student's Dictionary of Language and Linguistics*. London: Arnold.

- Ur, P. (2012). *A course in English language teaching*. Cambridge: Cambridge University Press
- Wadi, M. (1987). *Errors Made by University Students of English Pronunciation*. MA thesis, University of Baghdad, Iraq.
- Watts, P. & Huensch, A. (2013). Integrated speaking, listening and pronunciation: Are textbooks leading the way? In J. Levis & K. LeVelle (Eds.). *Proceedings of the 4th Pronunciation in Second Language Learning and Teaching Conference*. Aug. 2012. (pp.265-278). Ames, IA: Iowa State University.
- Van Els, T. (1984). *Applied Linguistics and the Learning and Teaching of Foreign Languages*. London: Hodder Arnold.
- Versteegh, K. (2014). *Arabic Language*. Edinburgh: Edinburgh University Press.
- Voss, B. (1984). *Slips of the Ear: Investigations into the Speech Perception Behaviour of German Speakers of English*. Tübingen: Narr.
- Wallace, E. (2004) *A Basic Course in Iraqi Arabic*. Washington: Georgetown University.
- Wardhaugh, R. (1970). The contrastive analysis hypothesis. *TESOL Quarterly*, pp.123–130.
- Westermann, D. and Ward, I.C. (1990). *Practical Phonetics for Students of African Languages*. London: Kegan Paul.
- White, et al. (2016). The effects of accent familiarity on English as a foreign language students' word recognition and comprehension of the English language. *วารสารวิจัย ม.ทร. กรุงเทพฯ*, 10(2), pp.19–28.
- Widdowson, H.G. (1994). The ownership of English. *TESOL Quarterly*, 28(2), p.77-389.
- Wilkins, D.A. (1972). *Linguistics in Language Teaching*. London: Edward Arnold.
- Wilkins, D.A. (1974). *Second Language Learning*. London: Edward Arnold.
- Wolfswinkler, K. and Reinisch (2016). The impact of accent familiarity on the perception of difficult sound contrasts for German learners of English. *Tagung Phonetik und Phonologie*, 12, pp.232-235.
- Wright, R., Frisch, S. and Pisoni, D. (1997). *Speech perception. Research on spoken language processing* (No. 21). Progress Report. Bloomington, Indiana: Indiana University.
- Yashima, T. (2002). Willingness to communicate in a second language: The Japanese EFL context. *The Modern Language Journal*, 86(1), pp.54–66.
- Yanny, (2006). *Communication Strategies Employed by Indonesian English Learners based on the length of studies*. PhD thesis, Petra University press, Petra.

Ying Zhang and Elder, C. (2011). Judgments of oral proficiency by non-native and native English-speaking teacher raters: Competing or complementary constructs? *Language Testing*, 28(1), pp.31–50.

Yule, G. (1985). *The Study of Language: An Introduction*. Cambridge: Cambridge University Press.

Zhang, Q.M. (2009). Affecting factors of native-like pronunciation: a literature review. *Chung-Ang University*, 27, pp.33-52.

Zielinski, B. (2006). The intelligibility cocktail: An interaction between speaker and listener ingredients. *Prospect*, 21(1), pp.22-45.

Zoghbor, W.S.K. (2011). The Effectiveness of the Lingua Franca Core (LFC) in Improving the Perceived Intelligibility and Perceived Comprehensibility of Arab Learners at Post-Secondary Level. PhD thesis, University of Leicester, UK.

Zoghbor, W. S. (2016). A Model for Speech Processing in Second Language Listening Activities. *English Language Teaching*, 9(2), pp.13-19.

Xie, X. and Myers, E.B. (2017). Learning a talker or learning an accent: Acoustic similarity constrains generalization of foreign accent adaptation to new talkers. *Journal of Memory and Language*, 97, pp.30-46.

Appendices

Appendix A: A document showing that the GTM was used in Iraq since 1938

وزارة المعارف
الامتحانات العامة للدراسة الابتدائية
حزيران ١٩٣٨

الزمن - ساعتان

الموضوع - اللغة الانكليزية

- I. Use each of the following words in a sentence:—
king, army, picture, wash, dishes, month, yellow, palm tree, hotel, home,
beautiful, ugly, winter, moon, strong, table, store, radio, long, rabbit.
- II. Write five sentences about your school:—
- III. (a) Name the days of the week.
(b) Name the months of the year.
- IV. Answer the following questions:—
(1) Are you a pupil or a teacher?
(2) With what do you write?
(3) How old are you?
(4) Do schools open on Fridays?
(5) What are the colours of the Iraqi flag?
(6) Should you brush your teeth every day?
(7) How many times do you eat in a day?
(8) How many big rivers does 'Iraq have'?
- V. Write a letter to one of your friends telling him about your English examination.
- VI. Use either (is) or (are) in filling out the blanks:—
(1) Ahmad and Jasim.....coming.
(2) My mother.....sick.
(3) This picture.....beautiful.
(4) Baghdad.....the biggest city in 'Iraq'.
(5) The boys.....playing well.
(6) My teeth.....white.

(Question 1: 20 Marks. Question 2: 15 Marks. Question 3: 20 Marks.
Question 4: 16 Marks. Question 5: 15 Marks. Question 6: 14 Marks).

Appendix B: 5th preparatory student book showing no focus on pronunciation

Book Map

Listening and speaking	Reading and writing	Grammatical areas and functions	Lexical areas
UNIT 1 Culture and customs			
<ul style="list-style-type: none"> ■ listening for gist and specific information ■ transferring information from listening texts to tables and forms ■ listening to a poem and detecting rhyme and rhythm ■ describing people's characters ■ maintaining a conversation (reacting to news, showing interest and checking information) ■ talking about recent events and lifetime experiences ■ describing a familiar festival or tradition 	<ul style="list-style-type: none"> ■ identifying and recognizing the audience for a range of texts ■ scanning for information ■ understanding how a text is organized ■ writing an informal e-mail, letter and postcard ■ writing a descriptive essay (brainstorming, making notes, organizing content, writing introductions and conclusions) ■ writing verses of a poem about Eid 	<ul style="list-style-type: none"> ■ revision of present simple and continuous ■ revision and extension of present perfect simple and continuous ■ question tags ■ <i>for</i> and <i>since</i> with perfect tenses 	<ul style="list-style-type: none"> ■ words to describe secular and religious festivals and celebrations ■ adjectives to describe people ■ adjective + preposition patterns
		Language learning <ul style="list-style-type: none"> ■ differentiating between specific pairs of consonants and vowels ■ starting new learner diaries and vocabulary notebooks 	

Appendix C: Pronunciation material for 1st and 2nd year university students in Iraq.

Stage: 1st Year

Course Title: English Phonetics and phonology

Credits: 5

Teaching Hours 3

Course Description:

This course is based on practical articulatory phonetics to teach the basic notions and skills of producing, transcribing and recognizing different speech sounds through teaching vowels and consonants. These skills help students to learn, understand and speak English language properly.

Learning Objectives:

At the end of the course, the students will be able to:

1. identify and produce a good number of observable phonetic sounds in English,

2. use the International Phonetic Alphabet to transcribe various words,
3. know the basics of the articulatory system and operation of its producing various speech sounds,
4. be familiar with speech sound technical description,
5. understand that each language has its own features,
6. recognize and transcribe speech pitch differences accurately,
7. understand how to use some basic procedures in phonemic analysis.

Course Content:

1. Speech organs and their work in English
2. Consonants of English
3. Sequence of Consonants.
4. Vowels of English
5. Words in Company

Required Textbook:

O’Conner. Better English Pronunciation.

Jonathan Marks, English Pronunciation in Use. Cambridge

Stage: 2nd Year

Course Title: English phonetics and Phonology

Credits: 5

Teaching Hours 3

Course Description:

The purpose of this course is to introduce EFL students to the theory and practice of phonology, i.e. (how sounds pattern in language, and how those patterns can be represented and explained). The goal is to learn to produce, transcribe, and describe in articulatory and linguistic terms many of the sounds known to occur in English language.

The course also tries to cover both perceptive and receptive skills in the sound system of the English language. It provides students with listening programs to patterns of native speakers in order to know how to produce sounds correctly, and how to distinguish among similar sounds in authentic contexts.

Learning Objectives:

Upon completing the course, students are expected to:

- 1- identify locations and functions of speech organs,
- 2- distinguish and produce all English sounds and know their features,
- 3- use phonetic symbols in order to transcribe English sounds,
- 4- produce sounds and clusters that cause problems for Arabic speakers,
- 5- recognize supra-segmental features, such as stress, rhythm, intonation...etc.

Course Content:

1. Introduction
 - The English Phonetics and Phonology
 - Phonemes and other aspects of pronunciation
 - Accents and dialects
2. The production of speech sounds
3. Long vowels, diphthongs and triphthongs
4. Voicing and consonants
5. Phonemes and symbols
6. Fricatives and affricates
7. Nasals and other consonants
8. The syllable
9. Strong and weak syllables
10. Stress in simple words
11. Complex word stress
12. Variable stress
13. Weak forms
14. Problems in phonemic analysis
15. Aspects of connected speech
16. Intonation

Required Textbook:

English Phonetics and Phonology, A practical Course. By Peter Roach 4th. edition

Appendix D: Speech Intelligibility Test

A. The production intelligibility test.

Please read the following passage clearly.

There was once a poor shepherd boy who used to watch his flocks in the fields next to a dark forest near the foot of a mountain. One hot afternoon, he thought up a good plan to get some company for himself and also have a little fun. Raising his fist in the air, he ran down to the village shouting "Wolf, Wolf." As soon as they heard him, the villagers all rushed from their homes, full of concern for his safety, and two of his cousins even stayed with him for a short while. This gave the boy so much pleasure that a few days later he tried exactly the same trick again, and once more he was successful. However, not long after, a wolf that had just escaped from the zoo was looking for a change from its usual diet of chicken and duck. So, overcoming its fear of being shot, it actually did come out from the forest and began to threaten the sheep. Racing down to the village, the boy of course cried out even louder than before. Unfortunately, as all the villagers were convinced that he was trying to fool them a third time, they told him, "Go away and don not bother us again." And so the wolf had a feast.

B. The perception intelligibility test.

You will hear three recordings in English produced by three English speakers from different first language backgrounds. The speakers are talking about the things they need to buy from a store. Kindly requested to rate from 1 to 5 the amount of effort you needed in understanding each speaker using the five-point rating scale provided.

Score	General description
5	I can understand everything with complete relaxation. No listener effort is required.
4	I can understand most of the speech. It requires some attention at times.
3	I can understand some of the speech with moderate effort. It was necessary to listen more than once.
2	I recognized a few words. It requires a great deal of listener effort.
1	No meaning is understood. Only a couple of words can be recognised.

Appendix E: The transcription used in the production intelligibility test

There was once a poor /pu:r/ shepherd /ʃiferd/ boy who used to watch his flocks /fla:ks/ in the fields next to a dark forest near the foot of a mountain/maunti:n/. One hot /hut/ afternoon, he thought /θaut / up a good plan /bla:n/ to get some company /ka:mpeni/ for himself and also have a little fun. Raising /raɪzɪŋ/ his fist in the air, he ran down to the village /fɪlɪdʒ/ shouting "Wolf, Wolf." /wɔ:lf/ As soon as they heard /hi:rd/ him, the villagers all rushed from their homes /hə:mz/, full of concern /kɒnsɜ:n/ for his safety /sefti/, and two of his cousins /kɒzɪnz/ even stayed with him for a short while. This gave the boy so much pleasure /pledʒə/ that a few days later he tried exactly the same trick again, and once more he was successful. However, not long after, a wolf that had just escaped from the zoo was looking for a change from its usual diet /dɛɪt/ of chicken and duck /da:k/. So, overcoming /ɒvərkɒmɪŋ/ its fear /fɛə/ of being shot /ʃu:t/, it actually did come out from the forest and began to threaten /θri:tɪn/ the sheep. Racing /raɪzɪŋ/ down to the village, the boy of course cried out even louder than before. Unfortunately /a:nfɔ:ʃɪnɛtli/, as all the villagers were convinced /kɒnfɛnst/ that he was trying to fool them a third time, they told him, "Go away and don not bother /boðə/ us again." And so the wolf had a feast /fest/.

Appendix F: Phonemic transcription of the reading passage

ðeə wɒz wʌns ə pʊə 'ʃepəd bɔɪ hu: ju:zd tu: wɒʃ hɪz flɒks ɪn ðə fi:ldz nɛkst tu: ə dɑ:k 'fɒrɪst
nɪə ðə fʊt ɒv ə 'maʊntɪn. wʌn hɒt 'ɑ:ftə'nu:n, hi: θɔ:t ʌp ə gʊd plæn tu: get sʌm 'kʌmpəni fɔ:
hɪm'self ænd 'ɔ:lsəʊ hæv ə 'lɪtl fʌn. 'reɪzɪŋ hɪz fɪst ɪn ði eə, hi: ræn daʊn tu: ðə 'vɪlɪdʒ
'ʃaʊtɪŋ "wɒlf, wɒlf." æz su:n æz ðeɪ hɜ:d hɪm, ðə 'vɪlɪdʒəz ɔ:l rʌʃt frɒm ðeə həʊmz, fʊl ɒv
kən'sɜ:n fɔ: hɪz 'seɪfti, ænd tu: ɒv hɪz 'kʌzɪnz 'i:vən steɪd wɪð hɪm fɔ:r ə ʃɔ:t waɪl. ðɪs geɪv ðə
bɔɪ səʊ mʌʃ 'plɛʒə ðæt ə fju: deɪz 'leɪtə hi: traɪd ɪg'zæktli ðə seɪm trɪk ə'gen, ænd wʌns mɔ:
hi: wɒz sək'sesfʊl. haʊ'evə, nɒt lɒŋ 'ɑ:ftə, ə wɒlf ðæt hæd dʒʌst ɪs'keɪpt frɒm ðə zu: wɒz
'lɒkɪŋ fɔ:r ə ʃeɪndʒ frɒm ɪts 'ju:ʒʊəl 'daɪət ɒv 'ʃɪkɪn ænd dʌk. səʊ, ,əʊvə'kʌmɪŋ ɪts fɪər ɒv
'bi:ɪŋ ʃɒt, ɪt 'æktʃʊəli dɪd kʌm aʊt frɒm ðə 'fɒrɪst ænd bɪ'gæn tu: 'θreɪn ðə ʃi:p. 'reɪsɪŋ daʊn
tu: ðə 'vɪlɪdʒ, ðə bɔɪ ɒv kɔ:s kraɪd aʊt 'i:vən 'laʊdə ðæn bɪ'fɔ:. ʌn'fɔ:ʃɪnɛtli, æz ɔ:l ðə 'vɪlɪdʒəz
wɜ: kən'vɪnst ðæt hi: wɒz 'traɪŋ tu: fu:l ðem ə θɜ:d taɪm, ðeɪ təʊld hɪm, "gəʊ ə'weɪ ænd dɒn
nɒt 'boðə ɜs ə'gen." ænd səʊ ðə wɒlf hæd ə fɪ:st.

Appendix G: The listening text and its phonemic transcription

Please call Stella. Ask her to bring these things with her from the store: Six spoons of fresh snow peas, five thick slabs of blue cheese, and maybe a snack for her brother Bob. We also need a small plastic snake and a big toy frog for the kids. She can scoop these things into three red bags, and we will go meet her Wednesday at the train station.

/pli:z kɔ:l 'stɛlə. ɑ:sk hɜ: tu: brɪŋ ði:z θɪŋz wɪð hɜ: frɒm ðə stɔ: sɪks spu:nz ɒv frɛʃ snəʊ pi:z, faɪv θɪk slæbz ɒv blu: tʃi:z, ænd 'meɪbi: ə snæk fɔ: hɜ: 'brʌðə bɒb. wi: 'ɔ:lsəʊ ni:d ə smɔ:l 'plæstɪk sneɪk ænd ə bɪg tɔɪ frɒg fɔ: ðə kɪdz. ʃɪ: kæn sku:p ði:z θɪŋz 'ɪntu: θri: rɛd bægz, ænd wi: wɪl ɡəʊ mi:t hɜ: 'wenzdeɪ æt ðə treɪn 'steɪʃən /.

Appendix H: The transcription used in the speaking task

Speaker 1

I am an Iraqi citizen. I was born in Baghdad and I live /li:v/ in it. I wish to serve my country and develop my skills in learning English language /la:ŋgwɛdʒ/. A lot of people /pi:bi/ ask me how to improve /ɪmpru:f/ themselves in English. So, I advise them to watch /wɒʃ/ movies in English. I advise them to listen a lot. I also encourage them to speak with their colleagues /kɒlɪdʒ/ and to read in English. At the end, I wish luck /lʊk/ to my friends.

Speaker 2

Last week I had a nice day with my friend. First, we had a small picnic in the park /bɑ:k/. Then, we went together /tuɡeðə(r)/ to Al Mansur Mall. We buy /beɪ/ many clothes from the mall. We bought clothes and ate our lunch. I also played some games like Discovery which I like it very much. After that we decided to watch a football match. I like the way the audience /ɔ:dɪni:s/ expressed their joy by singing and dancing.

Speaker 3

When I was in the sixth /sɪksθ/ (repeated) class. I loved to study English very much. I wanted to enter /ɪnter/ this department. I watched lots of movies and tried to translate without even looking at the writings. I tried hard to develop my English well /wɪl/ and my listening skills. Also, I wanted

to enter the English department because there are many opportunities. I attend every lesson /lɪsn/ and learned a lot. After I graduate, I want to be a teacher and learn many things and know how to put the materials /ma:ti:rəl/ in their right place.

Speaker 4

My favourite hobby is painting. I love painting very much. I find it fun and comfortable. I sometimes sit on my chair /tʃer/ alone painting and do nothing /nʌθɪŋ/ else. I like drawings /draʊnɪŋ/ since I was a child. I used to spend my spare time drawings. My friends and teachers encouraged me to complete my dream. I also love /lʌv/reading long novels and long stories which contained drawings.

Speaker 5

English is an international language. It is spoken by millions of people in all countries. I would like to study English in Britain. To increase /ɪnkreɪs/ your knowledge and language skill, you need to find good sources. There are many advantages to do that. I am thinking to do a course there this summer. I believe that I could improve my English language. Therefore, I intend to pursue my higher studies in English at this college /kəlɪdʒ/.

Speaker 6

I met my best friend yesterday. I saw her when we were in the mall. She was with her family /fa:mili/. They buy many clothes. We talked about everything and she asked about each one of you. She was talking about herself. She went to a different college /kəlɪdʒ/. She is studying now in the history department and have many friends. She gave me her number and asked me to keep in touch. She also asked me to make a group on Facebook and wish me good luck / lʊk /. If you have time please do the Facebook /fesbuk/ (repeated correctly as /fersbuk/) group /grʊ:p/_because I have a lot of work.

Speaker 7

I had something weird /wi:rd/ (funny) today. I was going to work driving my car. Suddenly my car broke down. The doors were not locked /lʊkt /. It included many tools /tʊ:l/, but I could not repair it because I had little experience in car motor /mɔ:tɔ:r. I called my assistant and then my

brother whose cars were broken too. In the beginning, I was angry because of car broken. But, when we remember what happened we all laughed.

Speaker 8

I am married and have one kid /ki:d/. I want to talk a little bit /bet/ about the challenges I faced as a family man and I believe also most of our families in Iraq faced. The use of technology like the internet and television /televiʃin/. Although important, the device is a trouble /trʌbl/ (a risk) to people if misused. It contained ideas which could affect especially the teenagers. The role /rɔ:l/ of the parents is to protect their kids from the misuse of technology.

Speaker 9

A true friend is rare /rer/ and hard to find nowadays. I will talk about my friend who is older /ɔ:dər/ than me. A true friend should be near you and make you feel that err you are not alone especially in difficult times. A good /gɔ:d/ friend will not be afraid to tell you when you are wrong. He mm shares your pain and grief. We cannot dispense with friends even if we have brothers and sisters.

Speaker 10

I am citizen. I live in Iraq. I was born in Baghdad and I still live in it. I err the sole brother of my family. I am divided err I am divided (pause) between work /wɔ:k/ or study. I go to school daily /deli/. I (pause) wish to develop /divelɒb/ my language skills. I believe I have the ability /æbɪləti/ to do better if I work hard.

Speaker 11

We went on a trip to Nisan province in Southern Iraq. I love to travel /tra:vɪl/ and see the world /wɔ:rɪld/. In that province we saw many animals in all the roads like cows, birds /berdz/, dogs and chickens. People should stop killing poor /pu:r/ animals. We passed across many beautiful agricultural areas. These agricultural (could not pronounce it) areas were very beautiful, with rivers and tall trees all the road. We enjoyed the clouds /kləʊdz/. We moved /mu:fɪd/ from one place to another. When we arrived in our place, we went to the lake. We took the boat /bə:t/ and I went fishing, but I didn't catch a lot of fish. Regardless of all memories /mɪməri/, the experience was really very interesting.

Speaker 12

The world of books is especial and large world. You should read books /bɔ:ks/ for knowledge, good material and entertainment or pleasure /pleʃər/. One should develop his abilities in reading, writing and thinking. There are many types of books related to our life like religion, literary and social books. They are considered the sources of information for everything. You can find books for free in the internet and some websites /wɪbsaɪts/ like Facebook and Google Chrome.

Appendix I: Consent Form

Your consent to participate in this research project is highly appreciated as it is part of my PhD research at London Metropolitan University. The aim of the research is to emphasise that non-native English speakers are not required to sound like native English speakers to be understood. What they need instead is a pronunciation level which is understandable i.e., intelligible. Your consent to participate also means that you can withdraw at any time without giving any reason. Also, your personal information and speech data will be confidential and that only the researcher can relate the information to you.

Name:

Signature:

Date:

Thanks for your time and help.

Majid Younus, PhD student

Signature:

Email: mry0008@my.londonmet.ac.uk

Appendix J: Research Ethics

	<p>Research Ethics</p>
<p>B2</p>	<p>Please outline any ethical issues that might arise from this study and how they are to be addressed.</p> <p>NB All research projects have ethical considerations. Please complete this section as fully as possible using the following pointers for guidance. Please include any additional information that you think would be helpful.</p> <ul style="list-style-type: none"> • Does the project involve potentially deceiving participants? <i>No</i> • Will you be requiring the disclosure of confidential or private information? <i>No</i> • Is the project likely to lead to the disclosure of illegal activity or incriminating information about participants? <i>No</i> • Does the project require a <u>Disclosure and Barring Service (DBS)</u> check for the researcher? <i>No</i> • Is the project likely to expose participants to distress of any nature? <i>No</i> • Will participants be rewarded for their involvement? <i>No</i> • Are there any potential conflicts of interest in this project? <i>No</i> • Are there any other potential concerns? <i>No</i> <p>If you answered yes to any of the points above, please explain.</p>
<p>B3</p>	<p>Does the proposed research project involve:</p> <ul style="list-style-type: none"> • The analysis of existing data, artefacts or performances that are not already in the public domain (i.e. that are published, freely available or available by subscription)? YES <p><i>Third year students from Baghdad University database are used to construct the sample for the present study. This requires a copy of the Ethical Approval obtained from London Metropolitan University by which an oral approval from the Colleges in Iraqi can be granted. Students' consents are also taken prior to starting data collection procedures. The students are assured that their identity will be kept hidden and they can withdraw from participating at any time. They are also informed about the nature of the topic investigated.</i></p> <ul style="list-style-type: none"> • The production and/or analysis of physical data (including computer code, physical entities and/or chemical materials) that might involve potential risks to humans, the researcher(s) or the University? <i>No</i> • The direct or indirect collection of new data from humans or animals? YES <p><i>The data needed for the present study are speech samples elicited from Iraqi university students. These samples are directly recorded using a digital recorder. All recordings are later stored in my personal computer, CDs and attached to my email.</i></p> <ul style="list-style-type: none"> • Sharing of data with other organisations? <i>No</i> • Export of data outside the EU? <i>No</i> <p>If you answered yes to any of the points above, please explain.</p>

<p>B4</p>	<p>Will the proposed research be conducted in any country outside the UK? If so, are there independent research ethics regulations and procedures that either:</p> <ul style="list-style-type: none"> Do not recognise research ethics review approval from UK-based research ethics services? <i>NO</i> <p>UK based research ethics are recognised by Baghdad University and i need that when collecting data in Baghdad for my study. Also, there are no separate procedures I have to follow there.</p> <p>and/or</p> <ul style="list-style-type: none"> Require more detailed applications for research ethics review than would ordinarily be conducted by the University’s Research Ethics Review Panels and/or other UK-based research ethics services? <i>NO</i>
<p>B5</p>	<p>If you answered yes to any of the points above, please explain.</p> <p>Does the proposed research involve:</p> <ul style="list-style-type: none"> The collection and/or analysis of body tissues or fluids from humans or animals? <i>No</i> The administration of any drug, food substance, placebo or invasive procedure to humans or animals? <i>No</i> Any participants lacking capacity (as defined by the UK Mental Capacity Act 2005)? <i>No</i> Relationships with any external statutory-, voluntary-, or commercial-sector organisation(s) that require(s) research ethics approval to be obtained from an external research ethics committee or the UK National Research Ethics Service (this includes research involving staff, clients, premises, facilities and data from the UK National Health Service (NHS), Social Care organisations and some other statutory public bodies within the UK)? <i>No</i> <p>If you answered yes to any of the points above, please contact your faculty’s RERP chair for further guidance.</p>
<p>B6</p>	<p>Does the proposed research involve:</p> <ul style="list-style-type: none"> Accessing / storing information (including information on the web) which promotes extremism or terrorism? <i>No</i> Accessing / storing information which is security sensitive (e.g. for which a security clearance is required)? <i>No</i> <p>If you answered yes to any of the points above, please explain. To comply with the law, researchers seeking to use information in these categories must have appropriate protocols in place for the secure access and storage of material. For further guidance, see the Universities UK publication Oversight of Security Sensitive Research Material in UK Universities (2012).</p>

<p>C1</p>	<p>Risk Assessment</p>
------------------	-------------------------------

	<p>Please outline:</p> <ul style="list-style-type: none"> the risks posed by this project to both researcher and research participants The nature of research brings no harm to the researcher and the participants .Travelling to Iraq is not risky at all because I live in Baghdad and nothing harm happens there. Besides, risk can be everywhere . <p>the ways in which you intend to mitigate these risks</p> <p>Data collection takes place inside the university and this reduces any kind of risk which may happen.</p> <ul style="list-style-type: none"> the benefits of this project to the applicant, participants and any others The findings of this study will be of value to English language teachers / learners, textbook writers and the educational system in Iraq as far as teaching English pronunciation is concerned.
--	--

	Approved	Feedback where further work required
Section A	Yes	No issues
Section B	Yes (please see answers to reviewers' concerns in italics)	<p>Reviewer 1</p> <p>It is a fascinating topic to explore.</p> <p>Reviewer 2</p> <p>I think more information could have been given on the following:</p> <ul style="list-style-type: none"> - How are the recordings of participants and transcriptions of recordings by native English speakers anonymised? <i>The researcher will use a study code system. Recordings of participants and transcriptions will be given certain codes that only the primary investigator can relate. Any implication as to the place and names of the participants are deleted. This will happen in the editing phase of the recordings.</i> - What happens to the data collected and written consent forms etc after the research is completed? <i>This research is conducted to investigate a particular topic with definite research questions and research aims. Therefore the data gathered and the consent forms will not be kept longer than is necessary for the research purpose.</i> - If participants choose their topics from a pre-set list, how are the topics chosen (topics to avoid etc ...) <i>General topics related to hobbies, holidays, school life and the like are chosen because it is believed that the students are familiar with such topics and therefore enough speech sample can be generated. Other sensitive topics are avoided like religion, politics and so on.</i>
Section C		Reviewer 1

	Yes (please see answers to reviewers' concerns in italics)	<p>The ethical consideration that I have is how the research is going to be presented to research participants so that they do not feel that their accent is a 'problem' and that was the reason that they were invited to take part. In other words, how is the research topic communicated to the participants to put their mind at ease.</p> <p><i>I will explain to them the difference between my research and previous research works and show that their participations will make changes to present views concerning pronunciation and not the other way round. Now, it is the learner who can in some way influence native speakers to make some modifications to present pronunciation models for EFL learners.</i></p>
Date of approval		12/05/16
NB: The Researcher should be notified of decision within <u>two</u> weeks of the submission of the application. A copy should be sent to the Research and Postgraduate Office.		
Signature of RERP chair		Klaus Fischer

Appendix K: Travel Permission for Data Collection

This is to certify that the above named student is enrolled on the aforementioned course at this University for the 2017/18 academic session.

Majid will travel to Iraq to collect data for his main study from 15/11/2017 till 15/02/2018

Yours faithfully

Signature: 

Academic Registry

Stamp:



London Metropolitan University | 166–220 Holloway Road | London N7 8DB | +44 (0)20 7423 0000 | londonmet.ac.uk

London Metropolitan University is a limited company registered in England and Wales with registered number 974438 and VAT registered number GB 447 2190 51. Our registered office is at 166–220 Holloway Road, London N7 8DB. London Metropolitan University is an exempt charity under the Charities Act 2011. Its registration number with HMRC is X6680.

