

**COMPARISON OF SYNTACTIC AND LEXICAL
COMPLEXITIES IN RESEARCH ARTICLES BY
IRAQI AND NON-IRAQI WRITERS**

ALI YASIR FAHAD AL SAHLANEE

UNIVERSITI SAINS MALAYSIA

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COMPLEXITIES IN RESEARCH ARTICLES BY
IRAQI AND NON-IRAQI WRITERS**

by

ALI YASIR FAHAD AL SAHLANEE

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LIST OF ABBREVIATIONS

AdjV	Adjective variation
AdvV	Adverb variation
ANOVA	Analysis of Variance
C/S	Number of clauses/ Number of sentences
C/T	Number of clauses/ Number of T-units
CARS	The Creating a Research Space
CN/C	Number of complex nominals/Number of clauses
CN/T	Number of complex nominals/Number of T-units
CP/C	Number of coordinate phrases/Number of clauses
CP/T	Number of coordinate phrases/Number of T-units
CT/T	Number of complex T-units/Number of T-units
CTTR	Corrected TTR
CVS1	Corrected VS1
CVV1	Corrected VV1
DC/C	Number of dependent clauses/Number of clauses
DC/T	Number of dependent clauses/Number of T-units
IRAs	The Corpora of Iraqi Linguistics Research Articles
L1	First Language / Mother Language
L1RAs	The Corpora of English L1 Linguistics Research Articles
L2	Second Language
L2RAs	The Corpora of English L2 Linguistics Research Articles
LCA	Lexical Complexity Analyser
LD	Lexical Density
LogTTR	Bilogarithmic TTR

LS1	Lexical sophistication-I
LS2	Lexical sophistication-II
LV	Lexical word variation
MANOVA	One-way Multivariate Analysis of Variance
MLC	Number of words/Number of clauses
MLS	Number of words/Number of sentences
MLT	Number of words/Number of T-units
ModV	Modifier variation
MSTTR	Mean Segmental TTR (50)
NDW	Number of different words
NDWERZ	NDW (expected random 50)
NDWESZ	NDW (expected sequence 50)
NDWZ	NDW (first 50 words)
NV	Noun variation
RA	Research Article
RQ	Research Question
RTTR	Root TTR
SCA	Syntactic Complexity Analyser
SFL	Systemic Functional Linguistic
SPSS	Statistical Package for the Social Sciences
SVV1	Squared VV1
T/S	Number of T-units/Number of sentences
TAALES	The Tool for the Automatic Analysis of Lexical Sophistication
TTR	Type/Token ratio
Tukey's HSD	Tukey's Honestly Significant Difference
Uber	Uber Index

VP/T	Number of verb phrases/Number of T-units
VS1	Verb sophistication-I
VS2	Verb sophistication-II
VV1	Verb variation-I
VV2	Verb variation-II

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**PERBANDINGAN KERUMITAN SINTATIK DAN LEKSIKAL DALAM
ARTIKEL - ARTIKEL PENYELIDIKAN TERBITAN PENULIS IRAQ DAN
BUKAN IRAQ**

ABSTRAK

Produktiviti penerbitan adalah penunjuk penting bagi prestasi ahli akademik dan institusi penguasaan tinggi. Hal ini mempengaruhi kedudukan dan prestasi institusi secara langsung. Menulis untuk tujuan penerbitan ditanda aras sebagai sebagai satu penulisan berkualiti tinggi yang menggunakan unit leksikal kompleks dan struktur sintaksis untuk menyampaikan dapatan kajian saintifik yang kompleks. Kajian kekompleksan linguistik mengkaji kompleksiti pada tahap leksikal dan sintaksis; ia dianggap sebagai penunjuk yang sah dari segi kualiti penulisan, kecekapan dan perkembangan. Memandangkan wujudnya isu produktiviti penerbitan yang rendah dalam kalangan ahli akademik Iraq dalam jurnal antarabangsa berwasit, kajian deskriptif ini bertujuan menilai dan membandingkan penggunaan item leksikal kompleks dan struktur sintaksis dalam penulisan artikel penyelidikan linguistik yang ditulis oleh penulis berbangsa Iraq, penulis yang menggunakan bahasa Inggeris sebagai bahasa kedua (L2), dan penulis asli bahasa Inggeris (L1). Berasaskan Teori Kontrastif Retoris, korpus kajian ini merangkumi 150 artikal linguistik yang diterbitkan dalam jurnal antarabangsa yang diindeks dalam pangkalan data Scopus, terutamanya 50 artikal linguistik hasil kerja penulis Iraq, penulis Inggeris L2, dan penulis asli L1. Kajian ini mengikuti kriteria Wood et al. (2001) untuk mengklasifikasikan penulis Bahasa Inggeris L1 dan L2. Kesemua teks dianalisis menggunakan *Lexical Complexity Analyser* (LCA) and *Syntactic Complexity Analyser* (SCA). Dapatan kajian menunjukkan bahawa penulis Iraq menggunakan item leksikal

dan struktur sintaksis kompleks dalam bilangan yang paling rendah dalam artikel mereka berbanding teks yang ditulis oleh penulis Inggeris L2 dan L1. Hal ini memberi kesan negatif kepada kualiti penulisan dan mengurangkan peluang bagi penulisan akademik Iraq untuk diterima oleh jurnal antarabangsa berkedudukan tinggi. Kajian ini mendedahkan dan meneroka punca masalah penulisan dalam penerbitan impak tinggi dalam kalangan penulis Iraq. Dapatan kajian ini diharapkan akan dapat memberi kesedaran kepada penulis Iraq untuk meningkatkan kualiti penulisan mereka. Pada masa yang sama, variasi leksikal dan pola sintaksis yang kurang penggunaannya dalam konteks Iraq perlu diajar dalam program penulisan akademik. Jika program ini direka secara sistematik, produktiviti artikel – artikel yang dihasilkan mungkin meningkat dan turut menyumbary kepada peningkatan penarafan universiti-universiti Iraq. Berdasarkan dapatan kajian ini, sih wujud ruang untuk mengkaji dan elemen Metadiscourse penulis Iraq untuk tujuan penerbitan sarta membina gambaran yang mudah difahami berkenaan amalan penulis Iraq dalam menggunakan bahasa Inggeris untuk menulis artikel untuk penerbitan.

COMPARISON OF SYNTACTIC AND LEXICAL COMPLEXITIES IN RESEARCH ARTICLES BY IRAQI AND NON-IRAQI WRITERS

ABSTRACT

Publication productivity is an essential metric of the performance of academics and higher learning. It is directly affecting institutions' ranking and reputation. Writing for publication is signified as high-quality writing that uses advanced complex lexical units and syntactic structures to convey complex scientific findings. Linguistic complexity investigates complexity at lexical and syntactic levels; it is perceived as a reliable indicator of writing quality, proficiency, and development. Given the issue of the low publication productivity of Iraqi writers in peer-reviewed international journals, this descriptive study was implemented to evaluate and compare the use of complex lexical items and syntactic structures in the writing of linguistics research articles (RAs) written by Iraqi, English second language (L2), and English first language (L1) writers. Using the Contrastive Rhetorical Theory underpinnings, the corpus of this study includes 150 linguistics RAs published in international journals indexed in the Scopus database, mainly 50 linguistics RAs each by Iraqi writers, English L2, and English L1 writers. This study followed Wood et al. (2001) criteria to classify English L1 and L2 writers. The texts were analysed using the Lexical Complexity Analyser (LCA) and Syntactic Complexity Analyser (SCA). The findings revealed that Iraqi writers utilised the lowest number of complex lexical items and syntactic structures in their RAs compared to the texts written by English L2 and L1 writers. This negatively impacts the quality of writing and subsequently reduces the chances of Iraqi linguistics RAs being accepted by high-ranking international journals. This study significantly uncovers and explores the fundamental cause of writing

problems in reputable publications among Iraqi writers. It is hoped that the findings would provide awareness for Iraqi RAs writers to enhance their writing quality. Likewise, the use of lexical variety and syntactic patterns needs to be taught in the academic writing programmes that seem lacking in the Iraqi context. If designed systematically, the Iraqi RAs may provide a sustainable volume of publication productivity that would also enhance the ranking of the Iraqi universities. Based on this study findings, there is a need to investigate other linguistic features such as Rhetorical structures and Metadiscoursal devices in the writing of Iraqi writers for publication purposes, to build a comprehensible picture of the practice of Iraqi writers in using English for writing RAs for publication.

CHAPTER 1

INTRODUCTION

1.1 Introduction

In this age of globalisation, scientific publication is considered an essential indicator of nations' development (King, 2004). The productivity of scientific publications directly affects institutions' ranking and reputation and reflects academics' participation in the community of practice (Hyland, 2016a). Therefore, publication productivity is one of the primary factors for assessing academic staff and institutions (Hyland, 2016b). Due to this fact, most institutions, mainly in developing countries, rush to increase their international publication productivity to achieve a high ranking and a remarkable reputation. These institutions place a lot of pressure on their academics to publish their works in peer-reviewed international journals indexed in reputable global scientific databases (Zheng & Guo, 2019).

English plays a significant role in the context of scientific publication. It is the dominant language of knowledge and science. It is considered one of the most dominating languages worldwide (Ganapathy et al., 2020). Most peer-reviewed international journals generally use English as the medium of writing for publication. It has become the global lingua franca of the academic context (Flowerdew, 2015, 2019). English language hegemonies scholarly publication and dissemination arena (Ramírez-Castañeda, 2020). Most of the peer-reviewed international journals adopted English as the academic language for research dissemination; therefore, English L2 writers in periphery countries are required to write in English to get a chance to publish their works in these journals.

This situation attracts attention to investigate the impact of using the English language as the medium of writing for publication on the productivity of English L2 writers. Some studies have argued that using English for research publication is an additional burden faced by English L2 writers, which may impact publication productivity, while English L1 face no language hurdle since they use their mother language. Therefore, English L2 writers are considered in a disadvantaged situation in using English for research publication compared to English L1 writers (Flowerdew, 2019; Gea-Valor et al., 2014; Martín et al., 2014; Muresan & Pérez-Llantada, 2014; Politzer-Ahles et al., 2016; Zheng & Guo, 2019). The impact of using the English language by non-native English writers on publication productivity is still not inclusive (Soler, 2019).

Writing is a crucial skill in scientific publication. It is a multilevel process; that requires different activities, such as planning, generation, and revision, to achieve text production (Majchrzak, 2018). In the academic context, writing is guided by language conventions and communicative purposes placed by the members of the community discourse (Swales, 1990). Academic writing is distinguished by a well-informed and focused topic, evidence-based development, textual coherence based on logical order and relations between ideas, and formal tone. Writers of academic texts depend on their linguistic resources, mainly lexical and syntactic resources, to build and construct written message and communicate ideas (Maamuujav et al., 2021). More specifically, academic writing for publication purposes and manuscript writing is a particular type of writing called scientific writing, which scientists use to communicate and exchange information and findings (Hyland, 2004a). Manuscript writing requires composing texts to express sophisticated ideas and showing complicated relationships between

variables of the study. Therefore, depicting this kind of information requires using complex syntactic structures and lexical items (Beers & Nagy, 2009, 2011).

In the context of investigating the use of English for publication purposes by English L2 and L1 writers, previous studies of English for research publication purposes (ERPP) have reported two controversial claims; on the one hand, the first group argues the disadvantaged position of English L2 writers in using English as the academic language (Flowerdew, 2019; Gea-Valor et al., 2014; Martín et al., 2014; Muresan & Pérez-Llantada, 2014; Politzer-Ahles et al., 2016; Zheng & Guo, 2019). On the other hand, the second group claims that English L1 writers face the same difficulties as English L2 writers since writing for publication requires academic skills, which English L1 writers do not naturally acquire (Fazel, 2019; Habibie, 2019; Hyland, 2016a; Soler, 2019).

Moreover, English L2 writing studies have also investigated the differences between L2 and L1 writers using English. They explored different linguistic constructs to identify and compare the linguistic features of the texts written by English L2 and English L1 writers. Among these constructs is complexity, which is widely used by L2 writing studies (Bulté & Housen, 2012). Complexity is a part of the model that contains Complexity, Accuracy, and Fluency (CAF); it is initially proposed by Skehan (1989) to analyse text quality, writing performance, and linguistic features of the texts written by English L2 writers (Johnson, 2017; Norris & Ortega, 2009; Plakans et al., 2019). For instance, Pallotti (2015) utilised the complexity construct to describe the linguistic features of written texts. Measures of linguistic complexity at lexical and syntactic levels showed a positive relationship with writing quality, writers' proficiency, and development (Biber et al., 2016; Bulté & Housen, 2014; Crossley &

McNamara, 2014; Kyle & Crossley, 2016, 2017, 2018; Lu, 2011, 2012; Norris & Ortega, 2009; Qin & Uccelli, 2016).

1.2 Background of the Study

1.2.1 Academic Publication of Iraqi Writers

Academic publication of Iraqi institutions is generally described in terms of the low productivity of published RAs in the international academic arena. The total number of Iraqi indexed RAs (1996-2021) is 79792 (*SJR - International Science Ranking*, n.d.). Compared with the productivity of regional countries, Iraq has a lower number of published articles than the United Arab Emirates, Saudi Arabia, Iran, and Turkey. Low productivity impacts the chances of Iraqi institutions being indexed in reputable ranking systems. Due to the low publication productivity of Iraqi writers in peer-reviewed international journals, the Iraqi Ministry of Higher Education and Scientific Research announced 2017 new instructions for academic promotion (No.167,2017) as cited in Abd Al-Hadi (2019). The further instructions encourage academic staff to publish their findings in peer-reviewed international journals indexed in databases like Scopus and Web of Science to achieve academic promotion. However, the new promotion order successfully increased the Iraqi annual output of scientific and technical RAs, from 2,259 in 2016 to 6,037 in 2018 (*Scientific and Technical Journal Articles - Iraq | Data*, n.d.), Iraqi institutions failed to be indexed in a reputable ranking system like the Academic Ranking of World Universities (*ShanghaiRanking's Academic Ranking of World Universities*, n.d.).

Moreover, Iraqi published RAs also suffer from a low citation rate. They received the lowest citation rate among Middle Eastern countries, as illustrated in table 1.1; the rate of citation per document is 5.71 (*SJR - International Science Ranking*,

n.d.). The low publication productivity and citation rate of Iraqi RAs in peer-reviewed international journals negatively impacts the reputation of both Iraqi institutions and academics. The new promotion system failed to increase the quality of Iraqi research. Therefore, this situation proved that issuing a new promotion system that encourages academics to publish in peer-reviewed international journals is not enough to get a prestigious ranking and reputation for Iraqi institutions and academics in the international academic arena. Iraqi writers need to publish more manuscripts in leading peer-reviewed international journals to receive more visibility and increase the citation rate. Thus, there is a crucial need to explore potential hurdles that may impact Iraqi international publication productivity. Among these suggested hurdles is the use of English as the academic language for research publication, as indicated by Jameel & Ahmad (2020).

Table 1.1 Number of RAs and Citation Rate of Middle East Countries

Country	Documents	Citations per document
Iraq	79792	5.71
Iran	733080	11.99
Jordan	60967	12.11
United Arab Emirates	87125	12.35
Egypt	302626	12.6
Turkey	767299	12.66
Oman	28405	12.92
Bahrain	10751	13.72
Yemen	7891	13.77
Kuwait	32882	14.01
Syrian Arab Republic	9942	14.96
Saudi Arabia	299283	15
Lebanon	45782	16.28
Qatar	42526	16.43
Palestine	10971	17.34

Like their peers in periphery countries, most Iraqi writers started writing their manuscripts in English to publish their findings in peer-reviewed international journals. Writing for publication is considered a challenging task that requires advanced academic language skills to produce high-quality text that meets the requirements of peer-reviewed international publishers. Iraqi writers consider writing in English for academic purposes a challenging task. It has been reported that Iraqi undergraduate and postgraduate students face general and academic difficulties in English writing (Keong & Mussa, 2015; Al-Shujairi & Tan, 2017; Mohammed et al., 2015). One of the primary reasons for such difficulties is that the Iraqi educational system does not offer academic writing courses (Keong & Mussa, 2015; Khazaal,

2019). The impact of using English for research publication by Iraqi academics is still not explored; there is no clear picture of how Iraqi writers use the English language to produce their manuscripts. There is a crucial need to investigate the linguistic features of the writing of Iraqi writers specifically for publication purposes to identify the improvement needed to increase the publication productivity of Iraqi writers.

The current study intends to investigate the use of linguistic complexity in writing linguistics RAs written by Iraqi, English L2, and English L1 writers. It utilised linguistic complexity construct to cover both lexical and syntactic levels of complexity. Linguistics complexity is defined in terms of the number and nature of the units used in a text; it investigates how these units are interconnected to compose a message (Bulté & Housen, 2014). Lexical and syntactic complexity have been widely utilised to examine the quality and linguistic features of written texts by English L2 writers. Previous studies have revealed the relationship between lexical and syntactic complexity measures and text quality; it has been proved that using more complex lexical items and syntactic patterns increases the quality of written text (Casal & Lee, 2019; Crossley & McNamara, 2014; Ortega, 2003; Wu et al., 2020).

Iraqi writers face different hurdles to achieving international publication in peer-reviewed international journals. The use of the English language as the medium of writing for publication is one of the suggested hurdles that impact Iraqi writers' productivity (Jameel & Ahmad, 2020). There is a crucial need to explore the practice of Iraqi writers in using the English language for publication purposes. There is a necessity to document the impact of using the English language by Iraqi writers on publication productivity, as previous studies have not reported the impact of using the English language on the productivity of Iraqi writers. The gap can be further by looking into the linguistic features of the writings of Iraqi writers for publication

purposes. Analysing the lexical and syntactic features of the texts written by Iraqi writers may provide further insights into the lack of performance of Iraqi writers in using the English language for research publication purposes. Previous studies of the Iraqi context were limited to investigating general academic writing issues by undergraduate and postgraduate students; they reported a general weakness in academic and general English skills (Al-Bayati, 2013; Keong & Mussa, 2015; Mohammed et al., 2015). Previous Iraqi studies neglected the investigation of the writing of advanced Iraqi writers for research publication. Alongside, the educational system in Iraq also ignores the importance of academic writing courses; it has been reported that there is no specialised academic writing course for postgraduate and undergraduate students (Keong & Mussa, 2015; Khazaal, 2019). Academic writing course is an essential tool to improve students' academic writing; the lack of such courses undoubtedly affects writing quality.

1.2.2 Writing for Publication By L2 and L1 Writers

Writing in English for publication is a complex and challenging task, particularly for both English second language (L2) and first language (L1) writers. One of the primary challenges for L2 writers is achieving a high level of language proficiency. They often encounter difficulties in grammar, vocabulary, sentence structure, and idiomatic expressions. According to Deviga & Arum Ardhani (2021), L2 writers often face challenges in grammar, vocabulary, and sentence structure. L1 writers, on the other hand, may assume that their native fluency automatically translates into effective written communication. However, they may struggle with formal academic writing conventions and clarity of expression. Jim (2017) notes that

L1 writers may struggle with academic writing conventions despite their native fluency.

Previous studies of writing for publication by English L2 and L1 writers have classified into two groups. The first group investigate the challenges faced by English L2 writers (Flowerdew, 2019; Gea-Valor et al., 2014; Martín et al., 2014; Muresan & Pérez-Llantada, 2014; Politzer-Ahles et al., 2016; Zheng & Guo, 2019). They have reported that English L2 writers face obstacles in using English as an additional language for research publication; these obstacles do not apply to English L1 writers (Flowerdew, 2019). In a survey done in the Romanian context, more than half of the informants considered English dominance in academic publications advantageous to English L1 writers (Muresan & Pérez-Llantada, 2014). Linguistic privilege affects academia in the effort needed by English L2 writers to write academically in English and in publishing bias (Politzer-Ahles et al., 2016); they also comment on Hyland (2016b) work in which he tried to reduce the importance of linguistic privilege and its beneficial role for English L1 writers.

On the other hand, the second group tried to reduce the significance of the advantage position of English L1 writers and shed more light on the academic challenges that English L1 junior writers face. Habibie (2019) criticises the previous works for focusing only on English L2 novice writers' difficulties and ignoring the challenges novice English L1 writers face. He disagreed with the opinion that English L2 writers are at a disadvantage situation in writing in English for publication. Hyland (2016b) argued that both English L2 and L1 writers face academic writing challenges since academic writing skills are not acquired naturally as other general language skills. Fazel (2019) argues that some English L1 novice writers may face linguistic challenges in academic writing. Along with this claim, Habibie (2019) states that

junior English L1 writers face the same challenges as English L2 writers in writing for publication.

In the field of second language writing, distinguishing between L1 and L2 writers has been a topic of ongoing debate. Classifying writers as L1 or L2 is a common practice in the field of second language writing. Of course there is no certain way to classify writers as English L2 and L1 writers, therefore, Wood et al. (2001) has proposed a criterion to classify writers into English L2 and L1 writers. This criterion depends on writer affiliation, writers affiliated with institution based in English native country is considered English native writer, while writer affiliated with institution based in non-English country is considered English L2 writer. Recent studies have relied on this criterion in their works to classify groups of writers (Flowerdew, 2008; Pan et al., 2016; Peacock, 2002; Yin et al., 2021).

1.3 Statement of the Problem

Iraqi writers publish a low number of RAs in peer-reviewed international journals (Jameel & Ahmad, 2020). The total number of Iraqi indexed published articles for the period (1996-2021) is 79792 (*SJR - International Science Ranking*, n.d.). Compared to the productivity of regional countries, Iraq has a lower number of published articles than the United Arab Emirates, Saudi Arabia, Iran, and Turkey. The low productivity of published articles in the international arena of publication affects the reputation of Iraqi universities and academics since the reputation of universities and academics is gauged based on publication productivity (Hyland, 2016b). Iraq has 35 public and 45 private universities; none of these universities is indexed in a reputable ranking system as in the Academic Ranking of World Universities (*ShanghaiRanking's Academic Ranking of World Universities*, n.d.). The use of the

English language for publication purposes by Iraqi writers is a potential hurdle that impacts publication productivity. Peer-reviewed international journals pay considerable attention to the quality of writing. Thus, RAs with low-quality text intend to receive low chances of being published in such journals (Lillis & Curry, 2015). A recent study on Chinese writers asserted that 35% of the respondents reported that their RAs were rejected due to writing problems and text quality issues (Mu, 2020). Difficulties in using the English language by non-native English writers for research publication arise from both general and academic skills (Flowerdew, 2019). In a similar scenario perceived in the context of publishing behaviour of Arab social sciences and humanities writers, Shehata and Elgllab (2018) stated that language barriers are one of the main challenges faced by Arab and mainly Middle Eastern writers. In their study of the impact of factors like Fund, Collaboration, Information and Communication Technology, and Job Satisfaction on the Iraqi academics' publication productivity in international journals, Jameel and Ahmad (2020) suggested that the English language barrier is a crucial factor that impacts Iraqi writers' productivity. Yet, despite these claims, no previous studies have probed into the nuances and patterns of Iraqi writers' academic production nor analysed the linguistic features of the English RAs written by Iraqi writers to validate the claim that English as a medium of writing for publication impacts Iraqi writers' productivity.

The use of the English language as a medium of writing for publication purposes has not been thoroughly investigated in the Iraqi context. Therefore, there is a crucial need to examine the practice of Iraqi writers in using English for research publication purposes. In order to reveal the impact of using English as the academic language for research publication purposes by Iraqi writers, we need to investigate the lexical and syntactic features of the texts of published RAs. The analysis of linguistic

complexity in the texts of Iraqi published RAs intends to reveal the amount of lexical and syntactic complexity utilised in the writings of Iraqi writers. The lexical and syntactic complexity measures are considered valuable indicators of writing quality and writers' proficiency (Crossley & McNamara, 2014; Lan et al., 2019; Ortega, 2003; Yoon, 2017). Therefore, this study aims to evaluate and compare the lexical and syntactic complexity of the linguistics RAs written by Iraqi, English L2, and English L1 writers. The lexical and syntactic complexity measures represent this work's dependent variables (DVs). By evaluating and comparing the lexical and syntactic complexity measures of the independent variable, language background (Iraqi, English L2, and English L1), we can explore the use of the English language as a medium for writing RAs for publication purposes and draw a clearer picture of the practice of Iraqi writers in writing for international publication in comparison to English L2 and L1 writers. The findings of this study intended to describe the practice of Iraqi writers in using the linguistic resources of the English language to produce their texts for publication purposes.

Furthermore, investigating the use of linguistic complexity in the texts of linguistics RAs intends to reveal the exact lexical and syntactic complexity differences between the writing of Iraqi, English L2, and English L1 writers. This study aims to identify the needs of Iraqi writers to improve the quality of their writing for publication purposes. The results intend to evaluate the amount of complexity utilised in the texts of RAs written by Iraqi writers. These findings may help assess the performance of the Iraqi writers of linguistics RAs in using English as the academic language for writing for publication. Investigating the lexical and syntactic levels of complexity will reveal the exact needs of Iraqi writers to improve their writings for publication purposes. Thus, improving the academic writing skills of Iraqi writers will help increase

international publication productivity. Finally, this work aims to contribute to the international debate regarding the notion of linguistic privilege and the differences between non-native English writers and native English writers in terms of writing for publication purposes.

1.4 Research Objectives

This study aims to build a comprehensible understanding of the use of the English language as the medium of writing for publication purposes by Iraqi writers of linguistics RAs through investigating the use of linguistic complexity in their writings. It intends to evaluate and compare the measures of lexical and syntactic complexity in RAs written by Iraqi, English L2, and English L1 writers. Specifically, there are five objectives that this study aims to achieve:

- 1.4.1 To evaluate the use of linguistic complexity in RAs written by Iraqi, English L2, and English L1 writers.
- 1.4.2 To compare the lexical complexity measures in RAs written by Iraqi, English L2, and English L1 writers.
- 1.4.3 To compare the syntactic complexity measures in RAs written by Iraqi, English L2, and English L1 writers.
- 1.4.4 To identify the significantly different lexical complexity measures in RAs written by Iraqi, English L2, and English L1 writers.
- 1.4.5 To identify the significantly different syntactic complexity measures in RAs written by Iraqi, English L2, and English L1 writers.

1.5 Research Questions

This research study seeks to answer the following questions:

- 1.5.1 To what extents do Iraqi, English L2, and English L1 writers utilise linguistic complexity in their writings of linguistics RAs?
- 1.5.2 In terms of lexical complexity, do the writing of Iraqi, English L2, and English L1 writers vary?
- 1.5.3 In terms of syntactic complexity, do the writing of Iraqi, English L2, and English L1 writers vary?
- 1.5.4 What are the significantly different lexical complexity measures in RAs written by Iraqi, English L2, and English L1 writers?
- 1.5.5 What are the significantly different syntactic complexity measures in RAs written by Iraqi, English L2, and English L1 writers?

1.6 Limitations and Delimitations of the Study

1.6.1 Limitations

The current study, as any other study, has its limitations. The term limitation has been defined in terms of potential weaknesses in a study; these problems were identified by the researcher of the study (Creswell, 2018). This study has the following limitations:

Firstly, the data of this study was limited to the RAs published in the linguistics field. The selected linguistics RAs were all published in peer-reviewed international journals the years 2016 to 2020 and indexed in the Scopus database. The limited number of Iraqi linguistics RAs published in the Scopus database is considered another limitation of the study. A total of 50 linguistics RAs were written by Iraqi writers and met the selection criterion of the study. This limited number of RAs may also impact the generalisability; therefore, further studies may include more RAs to compose more extensive datasets. Journals quartile was not taken in consideration, since the number of Iraqi RAs is limited and rarely published in Q1 and Q2 journals, based on preliminary search.

Secondly, regarding the analysis of lexical and syntactic complexity measures, this study adopted lexical and syntactic complexity measures implemented in the computational tools LCA, and SCA, designed by Lu (2011; 2012). These measures were used to evaluate the use of lexical and syntactic complexity in the writing of linguistics RAs. LCA and SCA are considered reliable automatic tools for analysing lexical and syntactic complexity in the academic writing of advanced and English L1 writers (Ha, 2019; Lei & Yang, 2020; Lu, 2010; Polio & Yoon, 2018). Other studies may include different measures implemented by other tools to assess different aspects

of lexical and syntactic complexity, such as, Coh-Metrix, Range, TAALES (THE AUTOMATIC ANALYSIS OF LEXICAL SOPHISTICATION), and TAASSC (THE AUTOMATIC ANALYSIS OF SYNTACTIC SOPHISTICATION AND COMPLEXITY). These computational tools were used to measure different aspects of complexity at lexical and syntactic levels. They utilise a wide variety of indices to cover the multidimensional nature of the complexity construct. For instance, Coh-Metrix calculates lexical items frequency, concreteness, diversity, as well as syntactic complexity (Graesser et al., 2004; McNamara et al., 2010). Range tool is used specially to evaluate lexical diversity by using indices like TTR (Type-Token Ratio), MTLD (Measure of Textual Lexical Diversity), and HD-D (Herdan's C), to determine the vocabulary diversity and sophistication of a text. TAALES is another specialised lexical complexity tool which includes over 400 indices to evaluate lexical sophistication (Kyle & Crossley, 2015). TAASSC on the other hand evaluates syntactic structures development, it includes a wide variety of indices to measure syntactic complexity of a given text (Kyle, 2016)

Thirdly, this study utilised the construct of complexity as conceptualised by the absolute approach of complexity, which defined complexity in terms of the lexical and syntactic components used in writing (Bulté & Housen, 2012). As opposed to the relative approach of complexity, which investigates the mental issues of complexity (Bulté & Housen, 2012; Housen & Kuiken, 2009).

Lastly, texts of published RAs are featured as texts written by high-proficiency advanced writers to communicate scientific findings or relationships. In light of the linguistic analysis perspective, different linguistic features are identified in texts written for publication purposes, such as complexity, rhetorical structures, and metadiscourse devices. Previous studies have widely used these features to analyse

texts of RAs; they found that writers of RAs use these features to produce high-quality texts that meet the requirements of the academic publishing community of practice. This study intended to investigate the linguistic complexity features in the texts of Iraqi linguistics RAs, and it is not intended to cover other linguistic features identified as a reliable indicator of the quality of texts written for publication purposes.

1.6.2 Delimitations

The current study focused on the use of the English language as the academic language for writing research for publication purposes. The preliminary search showed that Iraqi writers publish a low number of RAs in peer-reviewed international journals compared with regional countries like United Arab Emirates, Saudi Arabia, Iran, and Turkey. This study utilised the construct of linguistics complexity to investigate the texts of published RAs written by three groups of writers Iraqi, English L2, and English L1. The construct of linguistic complexity is used in this study to refer to lexical and syntactic levels of complexity (Lee et al., 2021). This study operationalised the lexical and syntactic complexity as multidimensional constructs; the lexical level includes Density, Sophistication, and Diversity dimensions, while the syntactic level includes, Overall, Subordination, Coordination, and Phrasal dimensions (Norris & Ortega, 2009; Read, 2000). These different dimensions were evaluated through various measures implemented in computational tools LCA and SCA (Lu, 2011, 2012).

This study's primary concern is to investigate linguistic complexity in the texts of Iraqi linguistics RAs and compare it with RAs written by English L2 and L1 writers. Therefore, the data of this study is the written texts of linguistics RAs. These RAs are published in peer-reviewed international journals indexed in the Scopus database. The majority of Iraqi linguistics RAs are published in international journals indexed in the

Scopus database since the new Iraqi promotion system encourages Iraqi writers to publish their works in peer-reviewed international journals indexed in the Scopus database (Abd Al-Hadi, 2019)

Since this study aims to investigate and compare linguistic complexity in the writing of linguistics RAs written by three different groups of writers. Therefore, it utilised the quantitative method to evaluate the use of linguistic complexity in the texts of linguistics RAs. The quantitative method is considered the cornerstone of the majority of applied linguistics research (Khany & Tazik, 2019). The quantitative values of the lexical and syntactic complexity measures in RAs written by Iraqi, English L2, and English L1 writers were all evaluated and compared to achieve the objectives of this study.

1.7 Definitions of the Key Terms

1.7.1 Linguistic Complexity

Linguistic complexity refers to the use of advanced items and structures (Ellis & Barkhuizen, 2005). This study conceptualised linguistic complexity to investigate the number and nature of linguistic items and their interconnections in a written text (Bulté & Housen, 2014). Linguistic complexity covers both lexical and syntactic levels of complexity (Lee et al., 2021).

1.7.2 Lexical Complexity

Lexical complexity is defined as the use of sophisticated, less frequent, advanced lexical items in writing (Laufer & Nation, 1995). This study utilised measures of lexical complexity implemented in the computational tool, LCA, designed by Lu (2012). Lexical complexity can be assessed by evaluating different sub-constructs of lexical complexity, such as density, sophistication, and diversity.

- **Lexical density:** it calculates the proportion of the lexical items to the functional items used in a specific text (Johansson, 2008; Read, 2000)
- **Lexical sophistication:** this dimension evaluates the use of advanced and less frequent words to the total number of words in a text.
- **Lexical diversity:** it shows the range of words utilised in a text. Diversity is usually evaluated by calculating the number of different words to the total number of words in a text (Lu, 2012).

1.7.3 Syntactic Complexity

Syntactic complexity is the range of sophistication of surface forms and structures in the produced language (Ortega, 2003). This study intends to use SCA (Lu, 2011) to evaluate the syntactic complexity measures in writing linguistics RAs. The construct of syntactic complexity has been operationalised as a multidimensional construct that covers, Overall, Subordination, Coordination, and Phrasal dimensions of syntactic complexity (Norris & Ortega, 2009).

1.7.4 Iraqi Writers

In the context of this study, they are writers affiliated with Iraqi institutions. Iraqi writers use English as the academic language for research publication.

1.7.5 English L2 Writers

This term is used in this study to refer to a group of writers who use English as a second language to write and disseminate their RAs. For this study, the writer's affiliation was utilised to determine the language background of the writers of linguistics RAs. Linguistics RAs written by writers who use English as L2 (except Iraqi writers) were all grouped in the corpora of English L2 linguistics RAs.

1.7.6 English L1 Writers

English L1 writers are a group of writers who use English as their native language. Linguistics RAs written by English L1 writers are grouped to compose the corpus of English L1 linguistics RAs. Due to the difficulty of determining writers' native language, this study framed the following criteria to assign language

background; the writer's affiliation based in English native country is considered English L1 writer.

1.7.7 Linguistics RAs

Linguistics research articles are defined in this study as scholarly publications that contribute to the field of linguistics by presenting research findings, theories, or analyses related to language and its various aspects. These articles are written by linguists and researchers who conduct in-depth investigations into various aspects of language, such as its structure, usage, acquisition, and variation.

1.7.8 Iraqi Linguistics RAs

Based on this study's objectives, which aim to investigate the texts of RAs written by Iraqi, English L2, and English L1 writers, the researcher framed a criterion to select RAs for the corpus of the study. In this study, Iraqi linguistics RAs are linguistics RAs written by Iraqi writers only and published in peer-reviewed journals indexed in the Scopus database. These RAs compiled the corpora of Iraqi linguistics RAs.

1.7.9 English L2 Linguistics RAs

In this study, English L2 linguistics RAs refer to RAs written by non-native English writers and published in high-profile international journals indexed in the Scopus database. This selection criterion was made to achieve the goals of this study. These RAs compose the corpora of English L2 linguistics RAs.

1.7.10 English L1 Linguistics RAs

English L1 linguistics RAs refer to the linguistics RAs written by English L1 writers and published in high-profile international journals indexed in the Scopus database. This selection of RAs was made to compose the corpora of English L1 RAs.

1.8 The Organisation of the Study

This thesis title is “Investigating the Linguistic Complexity Use in the Research Articles Written by Iraqi, English L2 and L1 Writers”. It intended to investigate the use of complex lexical items and syntactic structures in writing linguistics RAs written by Iraqi, English L2, and English L1 writers. It evaluated and compared the lexical and syntactic complexity measures in the texts of linguistics RAs. The organisation of this thesis is as follows.

Chapter One is the orientation chapter of this thesis, which contains the introduction, the study’s background, the problem statement, research objectives, research questions, limitations and delimitations, and the definition of key terms.

Chapter Two presents the literature related to this study. It discussed the use of the English language as a lingua franca and showed the current situation in the Iraqi context in using English for academic purposes. This is followed by a discussion of the adaptation of English as the academic language for research publication by English L1 as well as L2 writers. This chapter also presents the importance of writing quality and how linguistic complexity measures are considered reliable indicators of quality. Measures of lexical and syntactic complexity were discussed. Lastly, writing as well as complexity theories and approaches related to this study were discussed.

Chapter Three tackled the methodologies utilised in this study. It includes the design, approaches, and methods of the study. This chapter describes the study's data and the tools employed to analyse lexical and syntactic complexities in the corpus of the study. At the end of this chapter, the statistical methods used to analyse and compare the lexical and syntactic complexities in the texts of the three groups of writers were presented.

Chapter Four includes the results and findings of the descriptive and inferential statistics of this study's research questions. It also presented a discussion of the results and a summary of the findings.

Chapter Five presents the conclusion of the study. It contains the summary and conclusion, implications of the study, suggestions for future research, and the conclusion of the study.

1.9 Chapter Summary

This chapter provides a detailed discussion of the importance of scientific publications and the dominance of the English language as the academic lingua franca of RA's publications. It also discussed the current situation of Iraqi writers and the publication productivity in international journals indexed in reputable databases. The background of the study presents the impact of using the English language as the academic medium for publication by non-native English writers. It sheds light on the notion of linguistic privilege, the relationship between the use of linguistic complexity and writing quality and writer's proficiency. This chapter also raised the problem of study, which is the low productivity of international publications by Iraqi academics and institutions. The objectives and research questions are presented in sections (1.4) and (1.5). Section (1.6) showed the limitations and delimitations of the current study.

The definition of key terms and the organisation of the study are all discussed and presented in detail in sections (1.7) and (1.8).