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Syntactic Complexity of MA thesis and PhD Dissertation Abstracts Written by Native and Non-native Speakers of English

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Abstract: Academic texts have been characterized by the high number of noun phrases; however, to the best the researcher's knowledge, no prior study has investigated the syntactic complexity of noun phrases in abstracts written by native and non-native MA and PhD applied linguistics students. In an attempt to fill this gap, a corpus of 40 abstracts written by native and non-native MA and PhD applied linguistics students was collected and examined. Using two computer applications (L2SCA and TAASSC), the researcher analyzed the corpus to pinpoint possible differences. The findings of this study showed that there were some similarities and differences between the syntactic structures employed in the abstracts of native and non-native MA and PhD students. The results showed that noun phrase syntactic complexity measures (examined through TAASSC) were not successful in differentiating native versus non-native and MA versus PhD writers. The findings suggest that other measures rather than noun phrase complexity measures should be employed.

Keywords: noun phrase, syntactic complexity, academic text, MA thesis abstract, PhD dissertation abstract

INTRODUCTION

The examination of the texts written by expert writers and novice writers has always been an enchanting area of research in both L1 and L2 writing studies as it can help learners understand the areas they need to focus on to become an expert writer. Although there is no specific date to mention as the outset of such studies, this line of research became popular in the 1950s, and since then, several studies have been conducted to uncover different areas entailing novice and experience writers. The present study aims to address noun phrase complexity of the

thesis/dissertation abstracts written by native and non-native MA and PhD students and examine the extent to which they are different.

Syntactic complexity has been one of the main criteria in assessing L1 and L2 learners' production; however, due to its nature, it has evolved drastically in recent years, and as the recent studies have shown, the attention has been directed toward phrase level (rather than sentential or clausal levels) of complexity since it has been found to be more relevant to academic writing contexts. In recent years, some studies (Ansarifar, Shahriari, & Pishghadam, 2018; Larsson & Kaatari, 2020) have delved into this issue; however, none of them has used noun phrase complexity measures to compare the abstracts of native and non-native MA theses and PhD dissertations. The present study aims to occupy this niche in the literature.

The examination of the literature on language performance assessment shows that accuracy, fluency and complexity have been recurrent in different assessment models (Skehan, 1996). Although these three criteria have been examined in several prior studies, more attention has been paid to syntactic complexity since the 1990s. Different definitions have been provided by second language acquisition scholars, but an often-cited definition, which is provided by Ellis (2003), defines complexity as "the extent to which the language produced in performing a task is elaborate and varied" (p. 340). Linguistic complexity can be divided into global and local complexity. By global complexity, the linguistic knowledge of the language producer is emphasized, and by the local complexity, the depth of individual structures is focused upon (Bulte and Housen, 2012). The present study employs the local complexity definition and focuses on noun phrase syntactic complexity.

Measuring the syntactic complexity of texts is not a straightforward task. Several models have been employed in the last three decades to examine the syntactic complexity of structures in second language writing literature, which are reviewed in brief here. As Ansarifar et al. (2018) concluded, the measurement of syntactic complexity has been conducted using 1) the amount of subordination, 2) the production unit length, 3) the number of coordination, and 4) the range of syntactic structures. In 1998, Wolfe-Quintero reviewed one hundred research projects and concluded that clauses per t-unit and dependent clauses per independent clause were the most efficient measures to gauge the syntactic complexity of texts. In addition, other reviews (Bulte and Housen, 2012; Ortega, 2003) showed that the ratio measures were more popular than the frequency measures. It seems reasonable since in the ratio measures, the text length does not affect the results.

Another note-worthy feature of the measures is the growing popularity of examining complexity at the phrase level, while complexity was examined at the sentential and clausal levels, the first study to examine complexity at the phrase level was conducted by Spoelman and Verspoor (2010), who simply studied the mean length of phrases. From then on, other researchers incorporated more sophisticated measures at the phrase level (Refer to Park, 2017 for an exhaustive list of complexity measures). In addition, Biber, Gray, and Poopan (2016) criticized the use of complexity measures at the clausal level and asserted that clausal complexity was a features of conversation data and was not suitable for examining academic texts, which are noticeably different from conversations; as an alternative, the examination of syntactic complexity at the phrase level was suggested, which has been employed in several recent studies (e.g., Ansarifar et al., 2018; Larsson & Kaatari, 2020).

There are several studies which have focused on syntactic complexity; however, four studies are the most relevant ones and have been conducted in recent years which are reviewed here briefly. In another study, Ansarifar et al. (2018) examined the extent to which the abstracts written by graduate students and experts in applied linguistics were different with regard to their phrasal syntactic complexity. The employed four measures including pre-modifying nouns, -ed participles as postmodifiers, adjective-noun sequences as pre-modifiers, and multiple prepositional phrases as noun post-modifiers. The findings of their study indicated

that there was no significant difference between the abstracts written by PhD students and those written by expert writers in terms of phrase complexity except for multiple prepositional phrases as noun post-modifiers.

Azadnia, Lotfi, and Biria (2019) also studied the syntactic complexity of PhD dissertations written by Iranian non-native and English native speakers. In so doing, the researchers studied 83 sections from 20 dissertations written by these two groups. They used Coh-Metrix to analyze their data. The findings stated that among the criteria, Mean Number of Modifiers and Sentence Syntax Similarity functioned as distinctive factors differentiating between the first language (L1) and second language (L2) texts, whereas Left Embeddedness and Minimal Edit Distance were found to be similar between the texts of the two groups.

In a recent study, Larsson and Kaatari (2020) investigated the extent to which syntactic complexity is related to the formality level of texts. The researchers also examined the extent to which L2 learners employ the syntactic complexity features that expert writers do. In so doing, the researchers employed an extensive corpus from the British National Corpus, which included academic prose, popular science, news and fiction. The findings of this study indicated that L2 learners were generally aware of the registers; however, there were a few differences between their writing quality and that of the experts. In addition, the analysis of the data showed that learners provided fewer adjectival and prepositional modifiers than the expert writers. They also mentioned that the phrase complexity can predict the formality of a text.

Finally, in the most recent study, Ahmadi, Esfandiari, and Zarei (2020) investigated the noun phrase complexity of applied linguistics research papers written by Iranian non-native speakers of English and international experts. These researchers employed an automatic processing application and examined the normalized frequencies of modifiers. They used a corpus of 209 papers to answer the research question. The findings of their study showed that there were some differences between the performance of the two groups in producing relative clauses, post-modifying prepositional phrases, and total noun phrase modifiers. In addition, the findings showed that Iranian writers produced more lexical bundles in their texts.

The examination of this brief review shows that although they have uncovered some significant issues pertinent to syntactic complexity in writing academic texts, to the best of the researcher's knowledge, no prior study has examined the noun phrase syntactic complexity of the abstracts written by native and non-native MA and PhD thesis/dissertation.

Thus, this study is of significance as it contributes to the literature of second language academic writing since it provides its audience with an insight into how similar or different Iranian non-native and native MA and PhD students write the abstract of their theses/dissertations. The findings can depict whether and how these groups of writers employ different syntactic complexity features to formulate the noun phrases of their sentences. Furthermore, novice academic writers can benefit from the findings of this study as they can have an understanding of how successful writers construct the noun phrases of their sentences.

The present study aims to address noun phrase complexity of the thesis/dissertation abstracts written by native and non-native Iranian applied linguistics MA and PhD students and examine the extent to which they are different.

METHOD

Corpus

The corpus of this study included 40 applied linguistics abstracts (MA- non-native abstract= 10, PhD- non-native= 10, MA- native abstract= 10, PhD- native= 10). The MA thesis abstract corpus included 4936 words and the word count of the PhD dissertation corpus was 4781.

Corpus Collection Procedure

To collect the corpus, the following stages were taken. First, researchers decided to select the corpus from the discipline of applied linguistics as they both teach and do research in this discipline. Second, they decided to select abstracts written by native and non-native writers from two post-graduate levels of MA and PhD. Third, for native corpus, they selected MA and PhD thesis/dissertation abstracts from one of the famous data base (Proquest) and for non-native corpus, they selected MA and PhD thesis/dissertation abstracts from one of the famous data base (Irandoc) in Iran. Irandoc database includes the abstracts of all MA and PhD thesis/dissertation abstracts completed in Iran. It worth mentioning that the topics of the abstracts were similar and included *motivation*, *written feedback*, and *dynamic assessment*. Finally, the corpus were converted into files that are suitable for the analysis.

Procedure

In order to analyze the corpus data to examine the syntactic complexity of papers written by native and non-native speakers of English, the criteria provided by Kyle (2016) were employed. Table 1 presents a list of the criteria of determining a text's noun phrase complexity. In this study, determiner measure included articles, demonstratives, and qualifiers. The adjectival modifiers included those adjectives that modify a noun or noun phrase. Prepositional phrases that modifies a noun or a noun phrase formed the prepositional phrase measure. Possessive pronouns and nouns were also taken into account. Nonfinite verb phrases or clauses that modify a noun or a noun phrase, relative clauses that modify a noun, adverbs that modify an adjective in a noun phrase were the other measures of this analyzer. Finally, the conjunction words *and* and *or* were also investigated.

Table 1: Phrase complexity Criteria (taken from Larsson & Kaatari, 2020, p.5)

Type of dependent	**Description**
Determiners	Articles, demonstratives and quantifiers
Adjectival modifiers	An adjective that modifies a noun or a noun phrase
Prepositional phrases	A prepositional phrase that modifies a noun or a noun phrase
Possessives	A possessive pronoun or noun with possessive “s” that modifies a noun or a noun phrase
Verbal modifiers	A nonfinite verb phrase or clause that modifies a noun or a noun phrase
Nouns as modifiers	A noun that modifies a noun or a noun phrase
Relative clause modifiers	A relative clause is a clause that modifies a noun or a noun phrase and is often (but not always) marked by a “wh” word
Adverbial modifiers	An adverb that modifies an adjective in a noun phrase

Conjunction "and"	The conjunction "and" when used to join two noun or noun phrases
Conjunction "or"	The conjunction "or" when used to join two nouns or noun phrases

Furthermore, the criteria of L2 syntactic complexity analyzer (L2SCA) were taken into account to examine the complexity of the texts. These measures which were taken from Lu (2017) included length of production unit, sentence complexity, amount of subordination, amount of coordination, and degree of phrasal sophistication. Table 3 provides a more detailed information on these criteria.

Table 2: Measures of syntactic complexity

Type of measure	Measure
Length of production unit	Mean length of sentence
	Mean length of clause
	Mean length of T-unit
Sentence complexity	Sentence complexity ratio
Amount of subordination	T-unit complexity ratio
	Complex T-unit ratio
	Dependent clause ratio
	Dependent clauses per T-unit
Amount of coordination	Coordinate phrases per clause
	Coordinate phrases per T-unit
	Sentence coordination ratio
Degree of phrasal sophistication	Complex nominals per clause
	Complex nominals per T-unit
	Verb phrases per T-unit

To analyze the texts, a computer application called Tools for the automatic analysis of syntactic sophistication and complexity (TAASSC) developed by Kyle (2016) was employed. The researcher inserted the texts written by native speakers and non-native speakers separately into the application and received the results. As Larsson and Kaatari (2020) have argued, TAASSC is a precise and efficient tool to examine noun phrases complexity in a text. To compare the scores of each criterion, Mann-Whitney U was used.

Design

This study followed a mixed-methods approach (qualitative and quantitative). This study is quantitative as it checks the frequencies and percentages of syntactic complexity structures. This study is qualitative as it discusses syntactic complexity structures functionally.

FINDINGS

In this section, first, the findings of each group will be provided individually, and in the second part of this section, the results of the comparisons will be provided.

Non-native PhD Dissertation Abstracts and MA Thesis Abstracts

Table 3: Measures of Syntactic Complexity of Non-native PhD and MA Thesis/Dissertation Abstracts

	Group	Mean	Std. Deviation	U	Sig. (two-tailed)
Determiners	PhD	.3234	.13085	46.00	.762
	MA	.2980	.07281		
Adjectival modifiers	PhD	.3386	.08574	36.00	.289
	MA	.3107	.07777		
Prepositional phrases	PhD	.3163	.03834	66.00	.225
	MA	.3510	.08371		
Possessives	PhD	.0821	.04881	48.00	.880
	MA	.0763	.03538		
Verbal modifiers	PhD	.0635	.02266	31.00	.150
	MA	.0425	.03607		
Nouns as modifiers	PhD	.2261	.05834	55.00	.705
	MA	.2424	.05140		
Relative clause modifiers	PhD	.0121	.02037	70.00	.122
	MA	.0151	.01211		
Adverbial modifiers	PhD	.0124	.01486	44.00	.628
	MA	.0155	.02657		
Conjunction “and”	PhD	.1228	.04015	39.00	.405
	MA	.1065	.03879		
Conjunction “or”	PhD	.0030	.00625	56.00	.575
	MA	.0039	.00549		
Mean length of sentence	PhD	30.0808	4.88386	32.00	.173
	MA	26.5276	5.86520		
Mean length of clause	PhD	17.1323	1.80249	34.00	.225
	MA	15.8696	1.03034		
Mean length of T-unit	PhD	27.1500	4.87637	32.00	.173
	MA	23.6498	5.02640		
Sentence complexity ratio	PhD	1.7776	.38091	43.00	.594
	MA	1.6626	.29248		
T-unit complexity ratio	PhD	.3873	.16890	46.00	.761
	MA	.3909	.07919		
Dependent clause ratio	PhD	.2796	.10390	56.00	.648
	MA	.2975	.04360		
Complex T-unit ratio	PhD	.4848	.26781	45.5	.731
	MA	.4404	.08990		
Coordinate phrases per clause	PhD	.6894	.19426	20.5	.025
	MA	.5694	.08349		
Coordinate phrases per T-unit	PhD	1.0888	.29724	20.00	.023
	MA	.8384	.14480		
Sentence coordination ratio	PhD	1.1156	.10961	52.5	.84
	MA	1.1268	.13462		
Complex nominals per clause	PhD	2.7014	.36746	20.00	.023
	MA	2.3987	.24356		
Complex nominals per T-unit	PhD	4.2500	.64957	24.00	.048
	MA	3.5576	.69471		
Verb phrases per T-unit	PhD	2.6475	.87813	35.00	.256
	MA	2.1520	.46530		

As provided in Table 3, which provides information on both the descriptive statistics and Non-parametric Mann-Whitney U, there were some differences and similarities between non-native MA and PhD abstracts in terms of complexity measures. The results showed that there were some differences on the way Iranian non-native MA and PhD academic writers formulated the complexity of the sentences in their thesis/dissertation abstracts. The results of Mann-Whitney U showed the significantly higher level of coordinated phrases per clause, coordinated phrases per t-unit, complex nominal per clause, and complex nominal per t-unit in PhD dissertation abstracts (U= 20.50, p<.05, U= 20.00, p<.05, U= 20.00, p<.05, and U= 24.00, p<.05, respectively). The comparison of the other measures; however, did not yield any significant difference (Table 3).

Native PhD Dissertation Abstracts and MA Thesis Abstracts

Table 4: Native PhD Dissertation Abstracts and MA Thesis Abstracts

	Group	Mean	Std. Deviation	U	Sig. (two-tailed)
Determiners	PhD	.3291	.07976	45.00	.705
	MA	.3345	.08095		
Adjectival modifiers	PhD	.3320	.12945	45.00	.705
	MA	.2982	.08713		
Prepositional phrases	PhD	.3141	.04925	50.00	1.00
	MA	.3125	.05614		
Possessives	PhD	.0355	.03771	52.5	.850
	MA	.0407	.04173		
Verbal modifiers	PhD	.0452	.02523	28.5	.104
	MA	.0280	.02211		
Nouns as modifiers	PhD	.2057	.12085	59.00	.496
	MA	.2526	.12532		
Relative clause modifiers	PhD	.0367	.02731	37.00	.325
	MA	.0233	.02034		
Adverbial modifiers	PhD	.0227	.02109	44.00	.595
	MA	.0165	.01478		
Conjunction “and”	PhD	.0665	.04362	72.00	.096
	MA	.1070	.05276		
Conjunction “or”	PhD	.0057	.00831	44.00	.595
	MA	.0041	.00761		
Mean length of sentence	PhD	27.1030	3.20518	26.00	.070
	MA	24.7652	3.26580		
Mean length of clause	PhD	14.8213	3.23697	62.00	.364
	MA	16.4594	5.24482		
Mean length of T-unit	PhD	24.2354	4.49223	38.00	.364
	MA	21.7889	3.03032		
Sentence complexity ratio	PhD	1.8804	.33318	22.00	.033
	MA	1.5307	.32109		
T-unit complexity ratio	PhD	.4635	.10855	22.5	.037
	MA	.2792	.20913		
Dependent clause ratio	PhD	.3780	.08627	35.5	.272
	MA	.2821	.18364		
Complex T-unit ratio	PhD	.6488	.25451	33.00	.198
	MA	.4495	.34059		
	PhD	.4596	.35254	74.00	.069

Coordinate phrases per clause	MA	.6482	.31268		
Coordinate phrases per T-unit	PhD	.7413	.52634	64.5	.272
	MA	.8535	.37477		
Sentence coordination ratio	PhD	1.1351	.13831	44.5	.675
	MA	1.0916	.06123		
Complex nominals per clause	PhD	2.2940	.33980	39.5	.427
	MA	2.2643	.78599		
Complex nominals per T-unit	PhD	3.7663	.52779	18.00	.015
	MA	3.0280	.59905		
Verb phrases per T-unit	PhD	2.4550	.45645	45.00	.705
	MA	2.3732	.35513		

Like what we witnessed in non-native students' performance, as Table 4 indicates, in the majority of cases, there is no significant difference between the complexity measure scores of the abstracts written by native MA and PhD students. As the results of Mann-Whitney U show, the PhD students' scores of sentence complexity ratio, T-unit complexity ratio, and complex nominal per T-unit were significantly higher those of native MA students (U= 22.00, $p<.05$, U= 22.50, $p<.05$, and U= 18.00, $p<.05$, respectively). The other comparisons; however, did not show any significant difference between the performance of the two groups.

Native MA Thesis Abstracts and Non-native MA Thesis Abstracts

Table 5: Native MA Thesis Abstracts and Non-native MA Thesis Abstracts

	Group	Mean	Std. Deviation	U	Sig. (two-tailed)
Determiners	MA (Native)	.3345	.08095	27.00	.082
	MA (nonnative)	.2980	.07281		
Adjectival modifiers	MA (Native)	.2982	.08713	60.00	.449
	MA (nonnative)	.3107	.07777		
Prepositional phrases	MA (Native)	.3125	.05614	67.00	.198
	MA (nonnative)	.3510	.08371		
Possessives	MA (Native)	.0407	.04173	81.00	.019
	MA (nonnative)	.0763	.03538		
Verbal modifiers	MA (Native)	.0280	.02211	64.5	.271
	MA (nonnative)	.0425	.03607		
Nouns as modifiers	MA (Native)	.2526	.12532	47.00	.820
	MA (nonnative)	.2424	.05140		
Relative clause modifiers	MA (Native)	.0233	.02034	41.00	.494

	MA (nonnative)	.0151	.01211		
Adverbial modifiers	MA (Native)	.0165	.01478	33.00	.189
	MA (nonnative)	.0155	.02657		
Conjunction "and"	MA (Native)	.1070	.05276	55.00	.705
	MA (nonnative)	.1065	.03879		
Conjunction "or"	MA (Native)	.0041	.00761	55.00	.657
	MA (nonnative)	.0039	.00549		
Mean length of sentence	MA (Native)	24.7652	3.26580	54.00	.762
	MA (nonnative)	26.5276	5.86520		
Mean length of clause	MA (Native)	16.4594	5.24482	42.00	.544
	MA (nonnative)	15.8696	1.03034		
Mean length of T-unit	MA (Native)	21.7889	3.03032	60.00	.449
	MA (nonnative)	23.6498	5.02640		
Sentence complexity ratio	MA (Native)	1.5307	.32109	64.5	.270
	MA (nonnative)	1.6626	.29248		
T-unit complexity ratio	MA (Native)	.2792	.20913	67.00	.198
	MA (nonnative)	.3909	.07919		
Dependent clause ratio	MA (Native)	.2821	.18364	50.00	1.00
	MA (nonnative)	.2975	.04360		
Complex T-unit ratio	MA (Native)	.4495	.34059	50.00	1.00
	MA (nonnative)	.4404	.08990		
Coordinate phrases per clause	MA (Native)	.6482	.31268	44.00	.649
	MA (nonnative)	.5694	.08349		
Coordinate phrases per T-unit	MA (Native)	.8535	.37477	54.00	.762
	MA (nonnative)	.8384	.14480		
Sentence coordination ratio	MA (Native)	1.0916	.06123	56.00	.645

	MA (nonnative)	1.1268	.13462		
Complex nominals per clause	MA (Native)	2.2643	.78599	65.00	.256
	MA (nonnative)	2.3987	.24356		
Complex nominals per T-unit	MA (Native)	3.0280	.59905	76.00	.048
	MA (nonnative)	3.5576	.69471		
Verb phrases per T-unit	MA (Native)	2.3732	.35513	28.00	.095
	MA (nonnative)	2.1520	.46530		

Another set of comparison was conducted to examine possible differences between the syntactic complexity of MA thesis abstracts written by native and non-native students. The findings showed that except for two measures (complex nominal per t-units, U= 76.00, p<.05 and possessives, U= 81.00, p<.05), there were no significantly differences between the scores of the two groups.

Native PhD Dissertation Abstracts and Non-native PhD Dissertation Abstracts

Table 6: Native PhD Dissertation Abstracts and Non-native PhD Dissertation Abstracts

	Group	Mean	Std. Deviation	U	Sig. (two-tailed)
Determiners	PHD (Non-native)	.3234	.13085	59.00	.496
	PHD (Native)	.3291	.07976		
Adjectival modifiers	PHD (Non-native)	.3386	.08574	41.00	.496
	PHD (Native)	.3320	.12945		
Prepositional phrases	PHD (Non-native)	.3163	.03834	44.00	.650
	PHD (Native)	.3141	.04925		
Possessives	PHD (Non-native)	.0821	.04881	21.00	.028
	PHD (Native)	.0355	.03771		
Verbal modifiers	PHD (Non-native)	.0635	.02266	29.00	.112
	PHD (Native)	.0452	.02523		
Nouns as modifiers	PHD (Non-native)	.2261	.05834	43.00	.596
	PHD (Native)	.2057	.12085		
Relative clause modifiers	PHD (Non-native)	.0121	.02037	80.5	.019

	PHD (Native)	.0367	.02731		
Adverbial modifiers	PHD (Non-native)	.0124	.01486	65.00	.246
	PHD (Native)	.0227	.02109		
Conjunction "and"	PHD (Non-native)	.1228	.04015	17.00	.012
	PHD (Native)	.0665	.04362		
Conjunction "or"	PHD (Non-native)	.0030	.00625	59.00	.401
	PHD (Native)	.0057	.00831		
Mean length of sentence	PHD (Non-native)	30.0808	4.88386	33.00	.198
	PHD (Native)	27.1030	3.20518		
Mean length of clause	PHD (Non-native)	17.1323	1.80249	22.00	.034
	PHD (Native)	14.8213	3.23697		
Mean length of T-unit	PHD (Non-native)	27.1500	4.87637	34.00	.226
	PHD (Native)	24.2354	4.49223		
Sentence complexity ratio	PHD (Non-native)	1.7776	.38091	62.00	.362
	PHD (Native)	1.8804	.33318		
T-unit complexity ratio	PHD (Non-native)	.3873	.16890	61.00	.403
	PHD (Native)	.4635	.10855		
Dependent clause ratio	PHD (Non-native)	.2796	.10390	78.00	.034
	PHD (Native)	.3780	.08627		
Complex T-unit ratio	PHD (Non-native)	.4848	.26781	68.00	.173
	PHD (Native)	.6488	.25451		
Coordinate phrases per clause	PHD (Non-native)	.6894	.19426	21.00	.028
	PHD (Native)	.4596	.35254		
Coordinate phrases per T-unit	PHD (Non-native)	1.0888	.29724	24.00	.049
	PHD (Native)	.7413	.52634		
Sentence coordination ratio	PHD (Non-native)	1.1156	.10961	53.5	.788

	PHD (Native)	1.1351	.13831		
Complex nominals per clause	PHD (Non-native)	2.7014	.36746	22.00	.034
	PHD (Native)	2.2940	.33980		
Complex nominals per T-unit	PHD (Non-native)	4.2500	.64957	29.5	.119
	PHD (Native)	3.7663	.52779		
Verb phrases per T-unit	PHD (Non-native)	2.6475	.87813	47.00	.82
	PHD (Native)	2.4550	.45645		

As indicated in Table 6, there were some similarities and differences between the syntactic complexity scores of PhD dissertation abstracts written by native and non-native students. In the first set of differences, native writers gained significantly higher scores in relative clause modifiers (U= 80.50, p<.05) and dependent clause ratio (U= 78.00, p<.05); however, in six measures, the scores of the non-native students were higher (Possessives, U= 21.00, p<.05 Conjunction "and" U= 17.00, p<.05, Mean length of clause, U= 22.00, p<.05, Coordinate phrases per clause, U= 21.00, p<.05, Coordinate phrases per T-unit, U= 24.00, p<.05, Complex nominals per clause, U= 22.00, p<.05).

DISCUSSION AND CONCLUSION

The present study aimed to examine the syntactic complexity of MA thesis and PhD dissertation abstracts written by Iranian non-native speakers of English and native speakers of English. Four sets of comparisons were done to uncover the issue thoroughly. In so doing, a corpus of 40 abstracts was examined using L2SCA and TAASSC computer applications.

The comparison of the abstracts of non-native MA and PhD students' abstracts showed that there were some similarities and differences between the two groups. Regarding the similarities, it was found that the PhD abstracts' syntactic higher level of complexity was seen at the clause or the t-units, and none of the noun phrase measures provided by Kyle (2016) were found to be significantly different across the two groups. This is in line with some prior studies (Azadnia et al., 2019; Qi, 2014), which had found the suitability of syntactic measures beyond the phrase level to differentiate between high and low level students. However, the noun phrase measures did not show any significant difference between the performance of non-native MA and PhD students.

The syntactic complexity of the abstracts written by native MA and PhD students was also examined. The findings were similar to that of the non-native students as they showed that the noun phrase complexity measures were no capable of showing any difference between MA and PhD students' writing quality, and the differences were pertinent to the quantity of items (number of clauses in sentences, number of t-units in sentences, and number of complex nominals), and the quality (components) of noun phrases was not significantly different across the two groups.

The examination of the previous studies shows that some features within noun phrases were reported to distinguish between less and more expert writers. For instance, Larsson and Kaatari (2020), Ansarifar et al. (2018), and Staples and Reppen (2016) found that adjectival and prepositional modifiers were significant criteria that could reflect the general writing

ability of the writers. In addition, Biber and Gray (2010) argued that novice writers employ post-modifiers in the form of prepositional phrases to alleviate the tension between lack of explicitness in meaning and employment of noun phrases; however, the findings of this study showed that when it comes to the abstracts of academic monographs, either written by native or non-native writers, intra-phrasal features could not distinguish the two groups. One of the reasons might be the nature of the applied linguistics field of study. As Biber et al. (2016) have stated, in humanities, the researchers employ fewer prepositional phrases and employ more attributive adjectives to make their texts more compressed. The findings of this study did not show any significant difference between the number of prepositional and attributive adjectives; however, the writers' placing less marked importance on using postmodifiers (as science writers do) might have resulted in fewer prepositional phrases by both native and non-native writers.

The other comparisons conducted dealt with the examination of the syntactic complexity of MA and PhD abstracts across the two native and non-native groups. Surprisingly, the least number of significant differences were found in MA abstracts. In two measures (possessives and complex nominal per t-unit), Iranian non-native MA students used more complex structures. The findings of the comparison of PhD students' abstracts showed that in six cases, Iranian PhD students employed significantly more complex structures in their dissertation abstracts. Some of these factors were at the noun phrase complexity. For instance, Iranian non-native writers employed significantly more possessives and conjunction *and* in their abstracts. These findings were in line with those of the study conducted by Ahmadi, Esfandiari, and Zarei (2020), which showed that Iranian academic writers employed significantly more possessives than international writers to express their thoughts. The other differences, which showed the higher complexity of non-native writers' abstracts, were beyond the noun phrase level, and mainly dealt with the quantity of words in clauses, coordinated phrases or complex nominal.

In conclusion, as several recent studies (Ansarifar et al., 2018; Song & Wang, 2019; Yin, Gao, and Lu, 2021) have found, the comparison of the abstracts written by emerging and expert writers show that unlike the other sections of extended academic texts, writers spend significant amount of time on abstracts. Swales and Feak (2009) argue that both novice and expert writers are aware of the importance of abstract as it can have a significant impact on readers' decision how to appraise the paper; as a result, they do their best to provide their audience with their best performance. The vast number of non-significant pairs across degrees and linguistic backgrounds seem to reflect the perceived importance of abstracts in the texts written either by native and non-native writers. Even, there were some cases in which Iranian non-native writers provided more complex structures that native writers. This can show non-native students' concerns about the quality of their abstracts.

Another conclusion that can be cautiously drawn from the findings of this study deals with the unsuitability of using noun phrase complexity measures to differentiate between novice and expert or native and non-native writers since they were not successful in pinpointing the areas which could reflect the difference between the performance of novice versus expert and native versus non-native writers. However, considering the limited number of abstracts (N=40), conducting studies with an extensive corpus of abstracts can help us reach a comprehensive conclusion. In addition, the present study focused on applied linguistics abstracts; however, other researchers can compare the abstracts written by the MA and PhD students of other fields. Taking the significance of the effect of mother tongue structure into consideration, other studies can be conducted on the abstracts written by the non-native students from other native languages.

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