Syntactic Complexity in EFL Writing: Within-Genre Topic and Writing Quality[1]

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Abstract

This study examined the relationship between the syntactic complexity of EFL writing and writing quality as judged by human raters. It also explored the role of topics in the relationship. The data set used was 320 argumentative essays produced by EFL learners taken from the International Corpus Network of Asian Learners of English (ICNALE). These essays were analyzed using eight syntactic complexity measures with the L2 Syntactic Complexity Analyzer. The complexity indices and writing scores of the essays were quantitatively analyzed. The result indicated strong topic effects on the majority of syntactic complexity measures. There were significant changes across different proficiency levels in phrasal-level measures but not in clause-level measures. In comparison to essays on the smoking topic, essays on the part-time job topic showed a significantly greater overall T-unit complexity, particularly at more advanced proficiency levels. However, there were no statistical differences in overall sentence complexity. Concerning the relationship between syntactic complexity and writing quality, global features including Mean Length of Sentence (MLS) and Mean Length of T-unit (MLT) were found to have a significant, positive relationship with writing scores across both topics. At the local level, though, the correlations varied considerably between syntactic measures.

Keywords: second language writing, corpus analysis, syntactic complexity, topic effect, computational linguistics

Introduction

Syntactic complexity is accepted widely as the range and sophistication of grammatical resources exhibited in language production (Ortega, 2015). A commonly held belief is that L2 writers obtain more syntactic complexity as their language develops (Crossley & McNamara, 2014). It has long been recognized as an essential construct in EFL/ESL writing, as evidenced in writing studies that have examined the relationship of syntactic complexity to L2 proficiency or the quality of L2 writing (Lu, 2011; Stockwell, & Harrington, 2003). These studies have demonstrated that some indices of syntactic

complexity may be used to differentiate L2 proficiency levels and other indices used to predict the quality of ESL/EFL writing.

Meanwhile, several studies have tapped on different issues associated with syntactic complexity, including learners' development of syntactic complexity (e.g., Bult'e & Housen, 2014; Lu, 2011; Polat et al., 2019), and effects of various learner-, task- and context-related factors on syntactic complexity such as L1 backgrounds, genre, topic, planning time, and instructional setting (e.g., Lu & Ai, 2015; Ortega, 2003; Staples & Reppen, 2016; Yang et al., 2015; Yoon & Polio, 2017). These studies have provided deep insights into the growth of a learner's syntactic repertoire as an integral part of his or her development in the target language.

However, most L2 writing studies have some weaknesses, such as small sample sizes and homogeneity of learner proficiency, yielding conflicting findings. Also, it has been questioned what the construct in syntactic complexity is and what syntactic measures are relevant. Since Norris and Ortega (2009) proposed the examination of syntactic complexity as a multidimensional construct, to date, the research that adopted this proposal has been scarce (Byrnes et al., 2010). As Yang et al. (2015) point out, it is not easy to assume that the relationship between syntactic complexity and writing quality is the same across the various measures of syntactic complexity.

Regarding topic effects, most studies in L2 writing have highlighted the effect of different genres on syntactic complexity, such as argumentation or narration (e.g., Beers & Nagy, 2009; Lu, 2011). However, few studies are available on the effect of different topics within the same genre (e.g., Yang et al., 2015; Yoon, 2017). Additionally, insights from the related literature into the influence of within topic-related factors on L2 writing point to the need for scrutiny of within topic-related differences in the syntactic complexity in L2 writing.

To circumvent the limitations of previous research, this study attempts to measure syntactic complexity as a multidimensional construct by adopting a well-controlled, large corpus with standardized proficiency information. While addressing the gaps mentioned above, this study attends to the issue of topic effects in L2 writing and the relationship between syntactic complexity and L2 writing quality.

This study aims to address the following research questions:

What is the effect of topics on the syntactic complexity of EFL students' writing?
What is the relationship between syntactic complexity and the quality of EFL students' writing?

Literature Review

Syntactic Complexity and Second Language Writing

Syntactic complexity is generally defined as "the range of forms that surface in language production and the degree of sophistication of such forms" (Ortega, 2003, p. 492). As a sub-dimension of the larger construct of linguistic complexity, syntactic complexity has been viewed as a valuable indicator of language proficiency, language development, and the writing quality of L2 writers.

One of the most significant research strands is identifying appropriate and effective syntactic complexity measures regarding syntactic complexity. For example, Taguchi et al. (2013) investigated the syntactical features that can predict the writing quality of argumentative essays produced by college students. They found that the frequencies of subordinating conjunctions, attributive adjectives, and postnoun-modifying prepositional phrases could distinguish across different writing proficiency groups. As Yin et al. (2021) point out, different measurements have been proposed for detecting L2 writing syntactic complexity, which leads to the recognition that syntactic complexity as a multidimensional construct should be evaluated using indices tapping into complexity at phrasal, clausal, and global levels (e.g., Lu, 2017; Norris & Ortega, 2009).

Traditionally, the notion of syntactic complexity has been restricted to several global or clause-level measures of linguistic complexity (e.g., unit-length, subordination, and coordination) in L2 writing research (Ortega, 2003). Previous related literature involved a small number of measures and a relatively small amount of data (Lu, 2017). With the advancement in corpus linguistics that enables large-scale quantitative analysis of linguistic features, the validity of using subordination or other clause-level complexity measures to estimate writing proficiency development has been challenged and questioned. Numerous corpus-based studies have contributed significantly to advancing our understanding of variations in linguistic complexity across modalities and registers (e.g., Biber & Conrad, 2019; Biber et al.,2011).
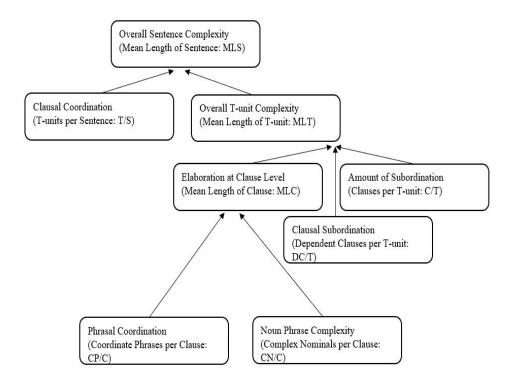
For example, Biber et al. (2011) suggested phrase-level sophistication (e.g., complex noun phrases) as more valid measures for academic writing development. Further evidence in other studies below supported the validity of phrase-level complexity as an integral part of syntactic complexity. For example, by analyzing a written corpus of Chinese learners of English, Lu (2011) reported a significant increase of complex nominals across proficiency levels. Similarly, Bulté and Housen (2014), in their L2 developmental study, examined the utility of the complexity construct for studying L2 writing development. They found a significant development in phrasal complexity and a lack of development in clausal subordination.

Further evidence has been provided by Mazgutova and Kormos's (2015) short-term longitudinal data. Mazgutova and Kormos were interested in the instructed development of syntactic complexity within a short time frame of a 4-week course. They found that intermediate-level L2 learners developed phrase-level syntactic complexity over such a short period.

In sum, it appears that phrasal complexity measures are capable of exploring L2 writing development more in-depth than clausal measures. However, the concurrent validity of different dimensions of complexity is not fully validated, necessitating further empirical evidence from more extensive sampling data.

Based on Norris and Ortega's (2009) conceptualization of syntactic complexity as a multidimensional construct, this study thus adopts Yang et al.'s (2015) conceptualization of this multidimensional construct and the hierarchical relationships among the sub-constructs with a minor adaptation (Figure 1). In this study, the term *clause* refers only to finite clauses, which aligns with Hunt's (1965) definition in the tradition of writing research. The term *non-finite element* is employed to refer to non-finite clauses.

Figure 1

A multidimensional representation of syntactic complexity

The Role of Writing Topic on Syntactic Complexity

Previous studies mainly explored the effect of different genres on students' syntactic complexity. These studies revealed consistently that L2 writers often achieved higher syntactic complexity in argumentative or expository essays than in narrative essays (e.g., Lu, 2011; Way et al., 2000). For example, Lu (2011) examined the linguistic complexity in argumentative and narrative essays written by Chinese EFL students and reported greater linguistic complexity in argumentative essays. Way et al. (2000), by employing four different evaluation methods (holistic scoring, length of the product, mean length of T-units, and percentage of correct T-units), investigated the effect of three different writing types (descriptive, narrative, and expository) on 937 writing samples from 330 novice learners. Their analyses indicated that descriptive writing was the easiest and expository writing the most difficult. Similarly, Yoon and Polio (2017) examined genre differences in linguistic complexity involving syntactic measures, lexical measures, fluency, and accuracy. They reported a significant genre effect on the phrasal level but not on the clausal level, but no genre effect on accuracy and fluency.

While the effect of different genres on students' syntactic complexity has received due attention in the L2 writing literature (e.g., Beers & Nagy, 2009; Lu, 2011), the effect of the topic as a within-genre prompt variable is not yet fully explored. Furthermore, there has been little research on the relationship between syntactic complexity and different topics within the same genre.

Thus far, a limited number of L2 writing studies have examined topic effects on syntactic or lexical complexity and how topics play a role in the relationship between linguistic complexity and writing scores. It was found that topic familiarity influences learners' choice of lexical measures (Yang and Kim, 2020), as different topics require different reasoning demands, thus generating different complexity measures. Ruiz-funes (2015) examined task complexity in essay writing and measures of syntactic complexity by analyzing the data from two separate studies she conducted with undergraduate FL learners of Spanish in an American university. Findings indicated that the familiarity of topics and genre determines task complexity in L2 writing. Yang et al. (2015) also examined the role of topics in syntactic complexity in ESL argumentative writing. In their study, 190 ESL graduate students produced argumentative essays on two different topics. The difference of the two writing topics they adopted was that the future topic was associated with causal reasoning while the appearance topic was not (i.e., Topic 1: people's excessive emphasis on personal appearance - lower reasoning; Topic 2: possibility of having a good future with careful planning at a young age - higher reasoning).

They reported that the writing topic had a significant effect on the syntactic complexity features. They concluded that "specific topics may naturally elicit more use of certain syntactic complexity features, that is, topic-intrinsic complexity features" (p. 62). Their study contributes to the syntactic complexity literature by focusing on a relationship between increased causal reasoning and increased syntactic complexity by subordination.

As Yoon (2017) strongly argued, however, it is not easy to exclude another possibility that participating students with diverse backgrounds, including ten major fields and 38 L1s, might not have felt both the future topic and the appearance topic as initially intended by the researchers. Informed by previous research on linguistic complexity in L2 writing, writing topics produced by relatively more homogeneous participating groups would usefully complement Yang et al.'s (2015) comparison on different levels of causal reasoning between two topics.

Similarly, Yoon (2017), examining within-genre topic effects on syntactic complexity, investigated a corpus of argumentative essays on two different topics written by college-level Chinese EFL learners. Yoon (2017) found that there were main effects of topics on syntactic complexity. Regarding topic familiarity, Yoon (2017) reported that the part-time job topic elicited more linguistically complex language than the smoking topic. While Yoon's work contributes to the growing literature on within-genre topic effects in L2 writing, it has some concerns. One primary concern is that there are many ungrammatical sentences in her learner corpus, which might have affected the accuracy of automated syntactic complexity measurement. More recently, Yoon (2021), exploring topic effects on metadiscourse features that reflect context and development in EFL argumentative writing, indicated a large-scale quantitative analysis of interactional metadiscourse by focusing on the topics of writings is essentially required. The result showed significant differences in EFL students' use of metadiscourse features across topics.

Meanwhile, Atak and Saricaoglu (2021) examined complexity developmental stages of 90 intermediate level L1 Turkish learners in their argumentative essays on three different topics, including cell phones, online learning, and the death penalty. Their findings illustrated a significant effect of the death penalty topic on learners' complexity

development, which is caused by its greater cognitive demands as a more impersonal topic than the others.

In sum, findings of topic effect studies have offered helpful information on how to approach the contribution of syntactic and lexical features to writing quality validly in consideration of topics. Also, these studies have offered some valuable insights into the multidimensionality of complexity measures and the within-genre effect of writing quality and linguistic complexity. Meanwhile, they also leave much room for further research.

Methods

Corpus Data

The dataset used in this study was an updated ICNALE module, the ICNALE Edited Essays of the International Corpus Network of Asian Learners of English (INCALE) (Ishikawa, 2013). Among the ICNALE Edited essays samples, essays produced by college students from Indonesia and Thailand were excluded because the number of essays was insufficient. In this study, thus the INCALE edited essays produced by non-native speakers (NNS) English as a Foreign Language (EFL) learners of four nationalities (i.e., Korea, Japan, China, and Taiwan) were adopted (see Ishikawa, 2018). In addition, EFL writers were divided into four groups in terms of the four different proficiency levels.

The original ICNALE is characterized as a reliable database for sophisticated international contrastive interlanguage analysis (CIA) and studies of the World Englishes in Asia. Unlike other corpora, the INCALE has the following principles: (1) a focus on Asia, (2) consideration of linguistic modes, (3) condition control, (4) proficiency control, (5) learner background survey, (6) native speakers' reference data collection, and (7) open distribution (Ishikawa, 2018).

Although the original INCALE has been widely used in publications, these essays are not rated. As a result, it was impossible to examine the type of error patterns and the degree of writing quality. This study thus adopted the INCALE Edited Essays to make a deeper analysis of writing quality possible. The INCALE Edited Essays include learners' original essays, their edited versions, and rubric-based evaluation scores.

The INCALE was designed with strict criteria, including writing conditions and L2 proficiency. College students wrote two argumentative essays on different topics under time constraints. The two topics assigned were as follows:

Topic 1. It is important for college students to have a part-time job (hereafter PTJ topic).
Topic 2. Smoking should be completely banned at all the restaurants in the country (hereafter SMK topic).

Each essay is expected to be between 200 to 300 words in length. Students were required to write two essays within 80 minutes. The EFL writers were classified into one of the 4 levels of the Common European Framework of Reference for Languages (i.e., A2: waystage; B1.1: threshold, lower; B1.2: threshold, upper; and B2: vantage or higher),

based on their scores on a proficiency test (e.g., TOEIC or TOEFL) or a receptive vocabulary size test.

Table 1 summarizes the detailed composition of the final dataset.

Table 1

Size of the corpus for this study

Topic	Proficiency	Essays	Total words	Words Mean	SD	Rate Mean	SD
PTJ	A2	40	8832	220.80	26.16	60.29	11.31
	B1.1	40	9184	229.60	26.91	67.42	12.36
	B1.2	40	9062	226.55	25.36	69.09	12.44
	B2	40	9752	243.80	36.65	75.74	10.01
SMK	A2	40	8855	221.37	34.57	63.63	12.06
	B1.1	40	8973	224.32	27.30	68.21	11.38
	B1.2	40	8922	223.05	26.88	70.49	12.68
	B2	40	9532	238.30	31.30	73.07	15.52
All		320	73,112				

Note. PTJ = Topic 1; SMK = Topic 2

Syntactic Complexity Measurement

This study examined the measures of syntactic complexity obtained from the L2 Syntactic Complexity Analyzer (L2SCA), which is available for free. L2SCA consists of 14 indices representing five dimensions of syntactic complexity, including the amount of subordination, amount of coordination, overall sentence complexity, length of a production unit, and phrasal complexity. L2SCA has been successfully applied in L2 writing syntactic complexity studies to examine issues of cross-proficiency differences, learner development, effects of learner- or task-related variables, and writing quality (e.g., Jiang et al., 2019; Lu, 2011; Lu & Ai, 2015; Yang et al., 2015; Yoon & Polio, 2017). L2SCA has been reported to have a good level of accuracy in calculating complexity values, with the relevant correlations between scores computed by human raters and the system (Lu, 2010). In addition, L2SCA generates syntactic complexity indices both at the clause level and the phrase level.

With a note of caution that some measures may be redundant from each other (e.g., Norris & Ortega, 2009), the syntactic complexity of each essay was assessed using eight different measures representing the eight interconnected sub-constructs laid out in the Literature Review. Following Lu (2011) and Yoon (2017), selecting the eight syntactic complexity measures was grounded in the criteria of redundancy, validity, and construct distinctiveness.

These measures include the mean length of sentence (MLS), T-units per sentence (T/S), mean length of T-unit (MLT), mean length of clause (MLC), clauses per T-unit (C/T), dependent clauses per T-unit (DC/T), coordinate phrases per clause (CP/C), and complex noun phrases per clause (CN/C). The definitions of the eight measures and the sub-constructs they represent are summarized in Table 2. Following Lu's (2010) definitions for the index's linguistic units and the eight measures - MLS, MLT, MLC, T/S, C/T, DC/T, CP/C, and CNP/C- were computed.

Table 2

Target complexity measures

Sub-construct	Measure	Definition
Overall sentence complexity	Mean length of sentence (MLS)	Number of words divided by the number of sentences
Clausal coordination	T-units per sentence (T/S)	Number of T-units divided by the number of sentences
Overall T-unit complexity	Mean length of T-unit (MLT)	Number of words divided by the number of T-units
Amount of subordination	Clauses per T-unit (C/T)	Number of clauses divided by the number of T-units
Finite clausal subordination	Dependent clauses per T-unit (DC/T)	Number of dependent clauses divided by the number of T-units
Elaboration at clause level	Mean length of clause (MLC)	Number of words divided by the number of clauses
Phrasal coordination	Coordinate phrases per clause (CP/C)	Number of coordinate phrases divided by the number of clauses
Noun phrase complexity	Complex NPs per clause (CNP/C)	Number of complex NPs divided by the number of clauses

Statistical Analysis

First, the target corpus was analyzed using the L2SCA, a freely-available computer program designed to examine the syntactic complexity of English written texts discussed above. For each of the essay samples, L2SCA generates frequency counts for nine structural units: words, sentences, verb phrases, clauses, dependent clauses, T-units, complex T-units, coordinate phrases, and complex nominals. Moreover, it also produces eight indices of target syntactic complexity calculated using the frequency counts.

After the target complexity indices had been obtained for each writing sample, SPSS version 20.0 was used to analyze the data. First, dependent samples *t*-tests were conducted to examine the effect of writing topics on the syntactic complexity of the writing samples. Pearson's product-moment correlations between syntactic complexity indices and writing scores were then run for each topic to identify the relationship between syntactic complexity and the quality of the essays.

Data Analysis and Findings

Research Question 1: Effect of Topic on Syntactic Complexity

Tables 3, 4, and 5 summarize the t statistics and the p values. The t statistics and the p values present the statistical testing results for the topic comparison for each feature.

Table 3 shows the descriptive results for Mean length of sentence (MLS), T-units per sentence (T/S), and Mean length of T-unit (MLT) used in the essays for the PTJ topic and the SMK topic across four proficiencies. Compared to essays on the SMK topic, essays on the PTJ topic showed a significantly greater overall T-unit complexity, as can be observed in the significantly higher values for MLT at B1.2 and B2 levels. There were, however, no statistical differences in overall sentence complexity, as measured by MLS.

Tables 4 and 5 display the descriptive statistics for Clauses per T-unit (C/T), Dependent clauses per T-unit (DC/T), Mean length of clause (MLC), Coordinate phrases per clause (CP/C), and Complex nominals per clause (CNP/C). In general, essays on the PTJ topic utilized a significantly higher amount of elaboration at the finite clause level, as observed in the significantly higher values for MLC, CP/C, and CNP/C. On the other hand, essays on the SMK topic tended to show a higher amount of elaboration in clausal subordination, as seen in the higher values for C/T.

Table 3

Mean values, standard deviations, and t statistics of MLS, T/S, and MLT by writing topic across four proficiencies

	MLS				T/S				MLT			
	PTJ	SMK	t	p	PTJ	SMK	t	p	PTJ	SMK	t	p
	Mean (SD)	Mean (SD)			Mean (SD)	Mean (SD)			Mean (SD)	Mean (SD)		
A2	17.43 (12.52)	14.94 (10.33)	1.26	.213	1.15 (0.23)	1.06 (0.20)	2.09	.05	14.61 (8.51)	13.36 (7.49)	.87	.386
B1.1	15.39 (3.75)	14.75 (3.20)	1.35	.182	1.10 (0.10)	1.11 (0.12)	-0.21	.833	13.93 (3.35)	13.34 (2.52)	1.14	.261
B1.2	15.82 (3.54)	14.91 (3.24)	1.67	.101	1.09 (0.10)	1.11 (0.12)	-0.61	.544	14.43 (2.96)	13.41 (2.51)	2.23	.031[*]
B2	16.80 (4.35)	15.70 (4.71)	1.83	.075	1.08 (0.09)	1.09 (0.11)	-1.23	.225	15.55 (4.00)	14.39 (4.95)	2.07	.044[*]

[*]$p<0.05$
Note. MLS = Mean length of sentence; T/S = T-units per sentence; MLT = Mean length of T-unit

Table 4

Mean values, standard deviations, and t statistics of C/T, DC/T, and MLC by writing topic across four proficiencies

	C/T				DC/T				MLC			
	PTJ	SMK	t	p	PTJ	SMK	t	p	PTJ	SMK	t	p
	Mean (SD)	Mean (SD)			Mean (SD)	Mean (SD)			Mean (SD)	Mean (SD)		
A2	7.02 (2.23)	7.80 (2.60)	-1.54	.130	0.56 (0.32)	0.59 (0.29)	-0.34	.731	8.70 (2.12)	7.88 (2.34)	1.90	.064
B1.1	7.67 (2.45)	8.12 (2.06)	-1.09	.279	0.58 (0.29)	0.66 (0.31)	-1.42	.163	8.30 (1.13)	8.24 (1.46)	0.25	.801
B1.2	7.30 (1.99)	8.80 (2.46)	-2.58	.025[*]	0.57 (0.26)	0.62 (0.22)	-1.28	.207	9.71 (1.31)	8.30 (1.15)	4.82	.031[*]
B2	7.72 (2.50)	8.95 (3.24)	-2.59	.013[*]	0.64 (0.25)	0.72 (0.26)	-1.85	.072	9.42 (1.90)	8.15 (1.71)	5.57	.000[**]

[*]$p<0.05$; [**]$p<0.01$
Note. C/T = Clauses per T-unit; DC/T = Dependent clauses per T-unit; MLC = Mean length of clause

Table 5

Mean values, standard deviations, and t statistics of CP/C and CNP/C by writing topic across four proficiencies

	CP/C				CNP/C			
	PTJ	SMK	*t*	*p*	PTJ	SMK	*t*	*p*
	Mean (SD)	Mean (SD)			Mean (SD)	Mean (SD)		
A2	0.12 (0.07)	0.11 (0.06)	0.48	.633	0.87 (0.27)	0.81 (0.27)	1.21	.233
B1.1	0.16 (0.10)	0.11 (0.08)	2.28	.021*	1.14 (0.25)	0.81 (0.23)	3.54	.002*
B1.2	0.17 (0.10)	0.13 (0.06)	2.43	.031*	0.99 (0.26)	0.80 (0.24)	2.38	.025*
B2	0.16 (0.14)	0.12 (0.08)	2.31	.026*	1.04 (0.35)	0.87 (0.35)	3.14	.003*

*p<0.05
Note. CP/C = Coordinate phrases per clause; CNP/C = Complex NPs per clause

Research Question 2: Relationship Between Syntactic Complexity and Writing Quality

Table 6 shows the correlations between each of the four syntactic complexity indices (i.e., MLS, T/S, MLT, and C/T) and writing scores for the PTJ topic and the SMK topic across proficiency levels.

First, MLS, indicating overall sentence complexity, significantly positively correlated with writing scores for both topics at B1.1, B1.2, and B2 proficiency levels. Second, MLT, indicating overall T-unit complexity, also significantly positively correlated with writing scores for both topics at B1.1, B1.2, and B2 proficiency levels. Third, T/S, showing clausal coordination, and C/T, showing the amount of subordination, did not correlate with writing scores for either topic.

Table 6

Correlations between syntactic complexity indices (MLS, T/S, MLT, C/T) and writing scores across four proficiencies

	MLS		T/S		MLT		C/T	
	PTJ	SMK	PTJ	SMK	PTJ	SMK	PTJ	SMK
A2	0.25	0.29	-0.28	-0.08	0.28	0.22	0.18	0.14
B1.1	0.36*	0.46**	-0.16	-0.15	0.39*	0.57**	0.75	-0.08
B1.2	0.32*	0.37*	-0.14	0.11	0.33*	0.37*	0.22	-0.08
B2	0.31**	0.40*	0.19	0.18	0.32*	0.35*	-0.08	-0.22

*p<0.05; **p<0.01
Note. MLS = Mean length of sentence, T/S = T-units per sentence, MLT = Mean length of T-unit, C/T = Clauses per T-unit

Table 7 summarizes the correlations between the remaining four of the eight syntactic complexity indices (i.e., DC/T, MLC, CPC, and CNP/C) and writing scores for the PTJ topic and the SMK topic across proficiency levels.

First, MLC, pertaining to elaboration at the finite clause level, significantly positively correlated with writing scores for the PTJ topic at B2 level and the SMK topic at B1.1, B1.2, and B2 levels. Second, CP/C, indicating phrasal coordination, significantly

positively correlated with writing scores for the PTJ topic at B1.2 and B2 proficiency levels and the SMK topic at the B2 level. Third, CNP/C, indicating noun phrase complexity at the finite clause, significantly positively correlated with writing scores for the PTJ topic at B1.2 and B2 proficiency levels and writing scores for the SMK topic at B1.1, B1.2, and B2 levels. Fourth, DC/T, measuring finite clausal subordination, did not significantly correlate with writing scores for either topic.

Table 7

Correlations between syntactic complexity indices (DCT, MLC, CP/C, and CNP/C) and writing scores across four proficiencies

	DC/T		MLC		CP/C		CNP/C	
	PTJ	SMK	PTJ	SMK	PTJ	SMK	PTJ	SMK
A2	-0.14	-0.17	-0.24	-0.04	0.00	-0.09	0.15	0.23
B1.1	0.07	0.22	0.09	0.50**	0.06	0.23	0.12	0.40*
B1.2	0.13	0.09	0.10	0.34*	0.31*	0.09	0.32*	0.47**
B2	0.06	-0.03	0.40**	0.43**	0.35*	0.37*	0.41**	0.45**

*p<0.05; **p<0.01
Note. DC/T = Dependent clauses per T-unit; MLC = Mean length of clause; CP/C = Coordinate phrases per clause; CNP/C = Complex NPs per clause

In summary, three measures indicating elaboration at the finite clause level – MLC, CP/C, and CNP/C- tended to exhibit some degree of positive correlation with the PTJ topic and the SMK topic. It should be noted that its correlation for the SMK topic, in general, had a tendency to be higher than that for the PTJ topic, and the strength of the relationships for significant findings is overall moderate to high, ranging from 0.31 to 0.57.

Discussion

Given that syntactic complexity has been viewed as a multidimensional construct (Norris & Ortega, 2009) with different levels of sub-constructs, the present study revealed complex findings of the effect of within-genre topic on syntactic complexity and the relationship between syntactic complexity and writing quality.

Regarding topic effects, the results of the dependent sample *t*-tests indicated that five out of eight complexity measures were significantly influenced, particularly at more advanced proficiency levels (i.e., B1.2 and B2). Furthermore, most of the complexity measures with statistical significance showed higher values in the PTJ topic than the SMK topic (except for C/T).

This result may reflect that a personal issue (a part-time job) is more situated explicitly within the everyday lives of college students in Asian countries than a social issue (a public smoking ban). It is highly possible that college students often have occasions in need of money and are employed as part-timers. This result is congruent with Yoon (2017), who suggested that the PTJ topic is more closely related to EFL writers' experience as college students than the SMK topic.

In line with Yoon's findings, this finding also echoes Hinkel's (2002) comprehensive study of topic relevance effects on linguistic features. In her study, prompts affected writings produced by both NNS and NS students. Hinkel (2002)

considered the prompt about choosing one's academic major as most relevant and the prompt on celebrity wealth as least relevant. When NNS and NS students worked on choosing academic majors, they used more nominalizations, infinitives, and conjunctions, which increased syntactic complexity.

Additionally, Ishikawa (2018), in his case study, demonstrated that the essay evaluation scores and the number of edits have a middle-level correlation and that they may be influenced by the essay topic, implying the topic effect on the argumentative essays' evaluation and editing. In summary, it is clear that a topic on college students' part-time jobs, which is believed to be more relevant to college-level EFL writers, tends to elicit more complex language.

The dependent sample t-tests also showed three measures with no significant effects: DC/T, T/S, and MLS (i.e., dependent clauses per T-unit, T-units per sentence, and mean length of sentence). This result gives partial support for a widely accepted statement that academic writing is featured by phrasal sophistication rather than clausal elaboration (Biber et al., 2011). The finding is consistent with Ortega's (2003) study suggesting that advanced writers express their complex ideas in argumentation through increased phrasal density. This study thus suggests that advanced college-level EFL writers would rely on a higher amount of complex noun phrases rather than greater clause-level elaboration.

Regarding the relationship between syntactic complexity and writing quality, global features including MLS and MLT were found to have a significant positive relationship with writing scores across both topics. At the local level, though, the correlations varied considerably between measures. For example, T/S, C/T, and DC/T were not significantly correlated with writing scores, whereas MLC, CP/C, and CNP/C tended to correlate with writing scores significantly. Therefore, these findings suggest that either of the two global measures (MLS and MLT) can operate well as a generic syntactic complexity measure since both were found to be significantly and consistently correlated with writing scores across topics.

The combined results indicate that the EFL students who were able to use both topic-related linguistic features and other types of local-level complexity features were rated with higher scores. Furthermore, a manual re-examination of the syntactic complexity features in the learner data showed how a higher level of syntactic complexity and variation are identified in the more highly rated essays for each topic.

Appendix A displays the use of the syntactic complexity features in essays for the two topics at two different score points. The first two samples, P1 and P2, are excerpts from two essays on the PTJ topic rated at 7.8 and 12, respectively. In both essays, subordinate clauses and complex noun phrases were frequently used, providing descriptions and lengthening the clauses.

However, in the lower-scored essay sample, the structure of complex nominals was much simpler than that in the higher-scored essay sample. The lower-scored essay often replied on two-word combinations: *future job*, *many jobs, other jobs*, *good way, hard experiences, department store, interesting time,* and so on. In contrast, the higher-scored essay sample contained more elaborated complex-noun phrases, making the essay highly propositional as well as descriptive. The instances of the longer complex-noun phrases included *their own parents' money, some type of other activity, a regular, paying job, life outside the classroom, the service industry off campus,* and *an important element*

to their future resume, and so on. The higher-scored essay demonstrated much greater syntactic complexity and variation

The second two samples, S1 and S2, illustrate how both essays for the SMK topic utilized finite and non-finite subordination and complex nominals, making both essays propositional. However, the lower-scored essay sample showed very few coordinate phrases. On the other hand, the higher-scored essay sample contained more use of complex noun phrases and several coordinate phrases that make the essay highly propositional. Similarly, the higher-scored essay showed higher syntactic complexity and variation.

In a further exploration of the sample essays, it was found that various viewpoints were put forward into EFL writing supported by different main points and specific examples (Appendix B). However, a similar argumentative approach was applied to banning indoor smoking with a mere focus on the adverse effects of smoking on the health of smokers and others nearby.

For example, in the PTJ topic, writers who supported the statement in favor of having a part-time job had the following different reasons: 1) gaining hands-on experiences, 2) becoming an asset for the future, 3) keeping students from becoming lazy, 4) realizing the value of money, and 5) learning time management skills.

In the SMK topic, most writers argued for the statement of banning indoor smoking with a reason to avoid second-hand smoke exposure among non-smokers. Relying on Hinkel's (2002) discussion on the topic relevance, it is reasonable to argue that while having sufficient content knowledge helps construct well-developed ideas in writing, less complex language features in writing may be attributable to topics with limited relevance to writers' own experience.

Conclusion

The present study confirmed the indices of phrase-level syntactic complexity as effective measures of L2 proficiency development while also indicating little change in clause-level syntactic complexity across proficiency levels. Finally, it can be concluded that phrase-level complexity measures are capable of detecting second language writing development more sensitively than clause-level measures. This outcome also calls for more specific measures to detect clause-level development in L2 writing.

Nevertheless, this does not necessarily suggest that clausal complexity is not essential. For example, a lack of differences in the statistical analysis does not indicate a lack of complexity. Instead, this means that EFL writers of texts rated as higher or lower quality do not produce such structures more or less frequently.

In addition, the findings can illuminate measurement choices for syntactic complexity. While investigating the relationship between syntactic complexity and writing quality, the present study suggests that either of the two global syntactic features (MLS and MLT) can be valid as a generic syntactic complexity measure since both significantly correlate with writing scores across topics.

The present study can also conclude that a personal and concrete topic may elicit better writings. This is an important implication for designers of writing tasks. For example, writing topics designed for assessments with time limits need to be relevant to EFL learners' experiences to elicit more complex language. Furthermore, writing

instructors are expected to have a clear understanding of the constructs of syntactic complexity measures to enhance the development of learners' linguistic repertoire more efficiently.

Conclusively this study has shown the effects within-genre topics have on the writing quality. However, this study is not without its weaknesses; the two writing tasks under examination probably differ not just in topic relevance. Therefore, future studies on writing-topic effects must develop a clearer-cut classification and definition of all the topic-related variables. At the same time, it is crucial to identify which local-level complexity features are of great use in predicting writing scores.

Acknowledgment

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Appendix A

Essay samples
Annotation symbols:
<u>underlined</u>: subordinate clause or element
italicized: complex noun phrases
bold: coordinate phrases
italicized and bold: coordinate phrases as modifiers of nouns, or complex noun phrases in a coordinate noun phrase

PTJ topic (Full score: 12)

P1. Score: 7.8

A part-time job is a way to <u>look for *future job*</u>. We can also experience *many jobs* through part-time jobs. It is very important to <u>experience *other jobs* because we don't know</u> that **what we are interested in and what we want to be**. For these reasons, I think it is a *good way* to <u>gain experience</u>. I have had part-time jobs. They were *hard experiences*, but it was *a great time* for me. <u>When I needed money</u> I sold clothes *last year*. I worked in a *department store*. It was very hard and I really wanted quit right away, but I needed money to <u>travel abroad</u> so I couldn't do that. <u>When I was 21</u>, I worked at a theater. It was *a interesting time*, but I stressed about money. <u>Because I **checked money and calculated money** accurately</u>, the theater earned money. I also worked at a *buffet restaurant*. The work was very hard but eating *delicious food* was very good. Sometimes people gave me tips, so I thought it was *a cool job*. A few months ago, I taught *middle school students*. It was *hard work* too, <u>because *middle school students* did not listen to my lessons</u>. I think

that the *many jobs* that I have experienced are going to be *good sources* in my future. Someday, you can experience *many part-time jobs* too.

P2. Score: 12

I'm also a *current college student* and I agree, the students who work even just *a small part-time job* at school are more motivated to get work done. Now, *some student*s do live off of *their own parents' money*, which is fine if they are that fortunate. However, if they don't have a need to work, these students should be involved in **a club or *some type of other activity***. There's *a lot of responsibility* that goes into running an organization on campus and it can help students remained grounded in *a similar way* that *a regular, paying job* would. Ultimately, anything that keeps students from becoming lazy is *a good thing*. Holding down a *part-time job* during college is important for *many different reasons*. Students will **enjoy** their work, **learn** *some **personal and financial** responsibility* **and experience** *life outside the classroom*. Having to focus on their studies is not *a valid excuse*, because there are *many options* available for *part-time work*, ranging from *a few hours per week* at *an on-campus job* to 20-30 hours per week in *the service industry off campus*. Some of *the most successful students* are successful because their part-time job allowed them to learn *an important element of success*: *time management*. If students keep their priorities straight and find a part-time job that is at least tolerable, students will be adding *an important element* to *their future resume*.

SMK topic (Full score: 12)

S1. Score: 5.4

In my childhood, my father always smoked near me. I thought that smoking was not a *bad thing*, but in *middle school* I saw a video that showed that smoking is so bad for people's bodies. I realized that smoking is a very *bad thing*. I do not smoke, but I am sure that my body is so bad. Because of my father, I experienced *second-hand smoking*. I don't care about people smoking, but smokers must not smoke near non-smokers. When I wait for a bus at the *bus stop*, I smell smokers' smoke. It is so bad, *smoking near non-smokers*. When I am an adult, I will ban smoking for my children, because it is so bad for a mom with a baby. Smoking is also banned in **playgrounds and kindergarten**. This gives *health benefits*. I saw on television that a famous comedian died because of smoking. I was so scared when I saw his death. When I go to a *computer fee room*, I always feel *smoking smell*. Smoking should be removed forever.

S2. Score: 8.8

I think smoking should be banned in *public places* like restaurants, because it causes more than 1000 deaths from lung cancer. *Second hand smoke* affects ***pregnant women*, children and *elderly people*** more. Smoking is also setting *bad examples for teens and young adults*. Also, scientists agree that smoking is dangerous. *Tobacco smoke* can cause **cancer, strokes and heart disease**. Smoking does **not just harm the smoker**; **it also harms people nearby** who breathe in the smoke. This is called *passive smoking*. **Smokers choose** to smoke, **but people nearby do not choose** to smoke passively. People should only be exposed to harm if they **understand** the risks **and choose** to accept them.

A *complete ban on smoking* in public is needed to <u>protect people from *passive smoking*</u>. Society accepts <u>that adults can decide</u> to <u>harm themselves</u> to some extent, <u>so long as they do not harm others</u>. This is why the proposition is not arguing <u>that people should be banned from smoking in private</u>. *Passive smokers* do not choose to<u> breathe in *other people*</u>'s smoke. <u>If they do not want to smoke passively</u>, they do not need to <u>go to places where smoking is allowed</u>. There is therefore *strong reason* to <u>ban smoking in public</u>.

Appendix B

Main points underlined

PTJ topic

P1. Score: 7.8

<u>A part-time job is a way to look for my future job</u>. <u>We can also experience many jobs through part-time jobs</u>. It is very important to experience other jobs because we don't know that what we are interested in and what we want to be. For these reasons, I think <u>it is a very good way to gain experience</u>. I have had several part-time jobs. They were very hard experiences, but it was a great time for me. When I needed money I sold clothes last year. I worked in a department store. It was very hard and I really wanted quit right away, but I needed money to travel abroad so I couldn't do that. When I was 21, I worked at a theater. It was a very interesting time, but I stressed about money. Because I checked money and calculated money accurately, the theater earned money. I also worked at a buffet restaurant. The work was very hard but eating delicious food was very good. Sometimes people gave me tips, so I thought it was a cool job. A few months ago, I taught middle school students. It was hard work too, because middle school students did not listen to my lessons. <u>I think that the many jobs that I have experienced are going to be good sources in my future</u>. Someday, you can experience many part-time jobs too

P2. Score: 12

I'm also a current college student and I agree, <u>the students who work even just a small part-time job at school are more motivated to get work done</u>. Now, some students do live off of their own parents' money, which is fine if they are that fortunate. However, if they don't have a need to work, these students should be involved in a club or some type of other activity. There's a lot of responsibility that goes into running an organization on campus and it can help students remained grounded in a similar way that a regular, paying job would. <u>Ultimately, anything that keeps students from becoming lazy is a good thing.</u> Holding down a part-time job during college is important for many different reasons. <u>Students will enjoy their work, learn some personal and financial responsibility and experience life outside the classroom.</u> Having to focus on their studies is not a valid excuse, because there are many options available for part-time work, ranging from a few hours per week at an on-campus job to 20-30 hours per week in the service industry off campus. <u>Some of the most successful students are successful because their part-time job allowed them to learn an important element of success: time management.</u> If students keep their priorities straight and find a part-time job that is at least tolerable, students will be adding an important element to their future resume.

SMK topic

S1. Score: 5.4

In my childhood, my father always smoked near me. I thought that smoking was not a bad thing, but in middle school I saw a video that showed that smoking is so bad for people's bodies. <u>I realized</u> <u>that smoking is a very bad thing</u>. I do not smoke, but I am sure that my body is so bad. Because of my father, I experienced second-hand smoking. I don't care about people smoking, but <u>smokers must not smoke near non-smokers</u>. When I wait for a bus at the bus stop, I smell smokers' smoke. <u>It is so bad, smoking near non-smokers</u>. When I am an adult, I will ban smoking for my children, because it is so bad for a mom with a baby. <u>Smoking is also banned in playgrounds and kindergarten</u>. This gives health benefits. I saw on television that a famous comedian died because of smoking. I was so scared when I saw his death. When I go to a computer fee room, I always feel smoking smell. Smoking should be removed forever.

S2. Score: 8.8

I think smoking should be banned in public places like restaurants, because it causes more than 1000 deaths from lung cancer. <u>Second hand smoke affects pregnant women, children and elderly people more.</u> <u>Smoking is also setting bad examples for teens and young adults.</u> Also, scientists agree that smoking is dangerous. Tobacco smoke can cause cancer, strokes and heart disease. <u>Smoking does not just harm the smoker; it also harms people nearby who breathe in the smoke</u>. This is called passive smoking. Smokers choose to smoke, but people nearby do not choose to smoke passively. People should only be exposed to harm if they understand the risks and choose to accept them. <u>A complete ban on smoking in public is needed to protect people from passive smoking.</u> Society accepts that adults can decide to harm themselves to some extent, so long as they do not harm others. This is why the proposition is not arguing that people should be banned from smoking in private. Passive smokers do not choose to breathe in other people's smoke. If they do not want to smoke passively, they do not need to go to places where smoking is allowed. There is therefore strong reason to ban smoking in public.