A Comparative Study Of Linguistic Complexity And Fluency Between Students' Oral Performance And Writing Production

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Abstract: Complexity and fluency have been the focus of psycholinguistic study, especially related to language productivity. This study investigated how linguistic complexity and fluency of ten L2 learners' oral performance correlate with their writing ability. After creating a written speech, the students' are administered to present the speech via zoom meeting. The recorded speech is transcribed and analyzed along with the written speech. The fluency is investigated using Kormos's (2006) measurements for oral performance and Abdel Latif (2013) for the written text. The finding of this study is reveal that only one of lexical complexity measurement has the sig. (2-tailed) value is not higher than 0.05 (LD=0.034, LS=0.941, and LV=0.674), which means there is a significant difference in lexical density while other measurements are not significantly different between their writing and speaking performance. Regarding the comparison of syntactic complexity, two of five indices of comparing the syntactic complexity of two-language production showed value <0.05 which means these two indices are significantly differ the writing production from the speaking performance. The sig. (2-tailed) value of comparing five indices of syntactic complexity such as MLS, MLT, C/S, VP/T, and CP/ is 0.0023, 0.064, 0.954,0.042 and 0.760, respectively. Concerning the fluency, it is found that the association of speaking fluency and writing fluency is not always in line.

Keywords: Linguistic Complexity, Fluency, Oral Performance, Writing Production

1 Introduction

Psycholinguists, especially SLA researchers, have been familiar with language production since numerous researches focus on language production, which covers complexity, accuracy, and fluency (CAF) for years recently. The CAF has been long used as a measurement of learner's productivity in acquiring a new language, for example, measuring their oral performance and writing production. The measurements have been claimed to depict the learners' actual ability in the target language vividly.

Linguistic complexity is about the ability of Second language learner’s ability in employing more advanced linguistic forms and functions in their language production. (Ellis, 2009). Multiple measures have been developed to capture variations related with English competence

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at the lexical level, and the results have been found to be consistent such as lexical richness (Malvern & Richards, 2012), use of academic words (Nagy et al., 2012), and lexical sophistication (Kyle & Crossley, 2016). Lexical complexity is a study of how words are chosen in spoken or written language. According to Lu (2012), lexical complexity can describe a writer's ability to communicate effectively in written form. The effectiveness of the writer's communication abilities can be demonstrated by examining the three components of lexical complexity in SLA: lexical density, variation, and sophistication. The lexical density is calculated by comparing the total number of lexical words (nouns, verbs, adjectives, and adverbs) in the corpus data to the total number of words. On the other hand, lexical variation refers to how the writer's words are varied. Using the Type Token Ratio (TTR), the researchers counted the types of words and compared them to the number of token words. The final metric is lexical sophistication, which quantifies the proportion of advanced or unusual words to the essay's total number of lexical words.

Additionally, Ortega, (2003) asserts that syntactic complexity has to deal with the variety of occurrences in language production and their sophistication level. Norris & Ortega (2009) proposed a measure of syntactic complexity based on the most frequently used length. In general, there are three types of syntactic complexity measures: length-based, clausal subordination-based, and phrasal complexity measures. In research on early first language acquisition, length-based metrics have been commonly utilized, with the assumption that longer utterances are typically more sophisticated (Norris & Ortega, 2009). Cumming et al., (2005) discovered that more proficient writers (as determined by holistic writing quality scores) tended to write longer T-units. Lu (2011) discovered that after the first year of studying English in an EFL university context, MLT increased. Additionally, longitudinal studies have revealed a generally positive relationship between syntactic complexity indices and time spent studying a second language

Bulté & Housen (2014) (Housen & Bulte, 2014) also discovered that MLT scores improved longitudinally over the course of a semester-long English for academic purposes (EAP) L2 writing course. However, sentence-level length measures are insufficient to assess subsequent language development and L2 writing, as longer sentences do not always indicate a more complex syntactic structure (Rimmer, 2008). By contrast, in L2 research, clausal subordination measures are used as a standard method for operationalizing syntactic complexity. It was shown that while the usage of clausal subordination is commonly used in spoken text (indicating by the use of more MLT in the text) Lu (2011), complex noun phrases on the other hand was preferably seen in academic writing (Biber et al., 2011). This suggests that various metrics may be needed depending on the mode and stage of L2 development. This research has shown that more successful L2 writers generate more extended phrases and that the phrasal complexity is better predictor of writing competency ratings than clausal subordination (Biber et al., 2014; Kyle & Crossley, 2018; Penris & Verspoor, 2017). This perspective places a premium on the clausal structure over length, such that a short sentence with multiple clauses is considered more complex than a longer sentence with a single clause (Lambert & Kormos, 2014). Those who studied syntactic complexity used a variety of different measures of syntactic complexity as an indicator for language competence or improvement (Bulté & Housen, 2018; Crossley & Mcnamara, 2014; Mazgutova & Kormos, 2015). Taken all consideration from previous studies, the researcher decided to use five indices in measuring syntactic complexity: mean length of sentence (MLS), mean length of T-Unit (MLT), clause per sentence (C/S), Verb phrase per T-unit (VP/T), and coordinate phrase per T-unit (CP/T).

Talking about measuring fluency in two dimensions: written and spoken, the researcher adapts the measurements from (Kormos, 2006). Kormos (2006) summarizes the most frequently used fluency measures in oral studies and concludes with ten measures that can be classified as follows: (a) Pauses (e.g., total pause time, silent and filled pauses per minute, and pause length), (b) Disfluencies (i.e., breakdown of fluency, as indicated by repetitions, repairs), (c) Rate (e.g., speech and articulation rate; run length), and (d) Pace and Stress (e.g., number and proportion of stress words). Another measurement proposed by Abdel Latif (2013) who divides writing fluency measures into two types based on how they were measured: (1) Product-based measures based on written texts regardless of their production method, and (2) Process-based measures based on online observation of writers' composing processes. The most common method of assessing writing fluency in product-based assessments is to evaluate the composition rate or text quantity by calculating the words per minute.

Considering these two theories, the researcher used (Kormos, 2006) for measuring students' speaking fluency and, on the other hand, used Product-based measures to define students' writing fluency (Abdel Latif, 2013).

To sum up, the researcher tried to compare students' linguistic complexity (lexical and syntactic complexity) in performing oral performance and their writing production. Also, she tried to compare students' fluency in their speaking and writing ability.

2 Methodology

This study is a mixed-method study that quantitatively compares undergraduate students' lexical and syntactic complexity from their oral performance and writing production and qualitatively compares students' fluency between their writing and speaking performance. The researcher also investigates and compares their writing and speaking fluency. The research examined ten second-semester undergraduate students enrolled in the University of Mulawarman's English Literature study program. They were requested to write a persuasive speech and perform it orally. Furthermore, the researchers collected ten essays and ten transcripts of their oral performance as the corpus of this study. The study compares lexical and syntactic complexity in both written and spoken performance to determine whether or not there is a difference between two performances in terms of those two measurements. Moreover, it was to find the comparison between students' writing and spoken fluency.

The researcher used the Web-Based Lexical Complexity Analyzer and Syntactic Complexity Analyzer (Lu, 2010) to analyze students' writing production in their essays and their oral performance transcripts. This web-based application provides varieties of lexical and syntactic complexity measurements. For lexical complexity, the researcher focused on three aspects of lexical complexity: lexical density, lexical sophistication, and lexical variation. While for syntactic complexity, she emphasized the investigations on four indices: Mean length sentence (MLS), clause per sentence (C/S), verb phrase per T-Unit(VP/T), coordinate phrase per T-Unit (CP/T). After analyzing the data, the researchers used the Paired Sample T-Test to compare students' lexical and syntactic complexity in written and spoken performance. The

value is calculated using the Paired Sample T-Test, displayed in a table, and then subjected to a conclusion drawing process.

For analyzing students' fluency, the researcher analyzed their writing using Product-based measures (Abdel Latif, 2013) and speaking fluency using Kormos's (2006) theory. The researcher compared both fluency quantitatively since the two measurements were slightly different, so it is not possible to measure and calculate them quantitatively. The result was displayed in narration and did not use any calculation formula.

3 Finding and Discussion

3.1. The Comparison of Students' Lexical Complexity in Writing Production and Oral Performance

According to Lu (2012) lexical complexity can be used to describe a writer's capacity for effective written communication. The writer's effectiveness as a communicator can be illustrated by analyzing the three elements of lexical complexity in second language acquisition: lexical density, variation, and sophistication. Ten students are requested to write a persuasive speech and perform it orally. The written persuasive speech and the transcripts of their oral performance are measured using Lexical Complexity Analyzer (Lu, 2010) and the result are shown as the display table below:

Table 1 The Data Display of Lexical Complexity between Writing And Oral Performance

No.	Participant	Lexical Density		Lexical Sophistication		Lexical Variation	
		Writing	Speech	Writing	Speech	Writing	Speech
1	A	0.48	0.49	0.19	0.20	0.12	0.36
2	B	0.51	0.50	0.19	0.17	0.49	0.48
3	C	0.56	0.55	0.26	0.26	0.43	0.46
4	D	0.44	0.42	0.13	0.16	0.36	0.38
5	E	0.56	0.55	0.16	0.19	0.43	0.44
6	F	0.53	0.45	0.26	0.22	0.40	0.15

7	G	0.60	0.56	0.25	0.22	0.48	0.42
8	H	0.55	0.52	0.14	0.12	0.40	0.31
9	I	0.52	0.52	0.13	0.20	0.46	0.48
10	J	0.49	0.48	0.23	0.18	0.38	0.3

Looking at each aspect, most of the students have different lexical complexity both in their writing production and speaking performance. Hence, they perform a similar theme and speech; the situation where they perform the speech can make their speaking production differ from the writing. The table below gives a vivid result of how the comparison between students' lexical complexity in their writing production and speaking performance.

Table 2 The Comparison of Lexical Complexity in Writing Production and Oral Performance

		Paired Differences					T	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Lexical Density of Writing - Lexical Density of Speaking	,02000	,02539	,00803	,00184	,03816	2,491	9	,034
Pair 2	Lexical Sophistication of Writing - Lexical Sophistication of Speaking	-,00100	,04122	,01303	-,03049	,02849	-,077	9	,941
Pair 3	Lexical Variation of Writing - Lexical Variation of Speaking	,01700	,12347	,03905	-,07133	,10533	,435	9	,674

From the table above, it is clearly seen that only one pair which is sig. (2-tailed) is less than 0,05 as the requirement of deciding whether there is a significant difference between the pair. It

has been demonstrated that the lexical density between two types of language production (writing and speaking) is significantly different, which is produced by the differences in the conditions in which the students deliver the speech. Performing the speech lively in front of their friends may cause them nervous so they might not tell what they have written even if they memorize it. The psychological threat is likely to be one of the reasons why their speaking performance is lower in term of its lexical density. Since lexical density is related to the numbers of lexical words compared to total words produced, therefore the unexpected condition and nervousness may become a threat for them which caused the students to add more fillers, repeat the words frequently, or forget what they exactly want to say. These are likely to explain why students' speaking performance has significantly lower lexical density than their writing.

According to the table, lexical sophistication and lexical variation are not significantly different between students' writing and speaking performance. The sig. (2-tailed) of those two measurements are more than 0,05, which shows an insignificant difference between the pairs. The students in this study perform their speech one week after making the persuasive speech. Therefore, memorizing the speech instead of understanding the points is inevitable. In memorizing the speech, the students must focus on the important words they have written in their essays. Therefore, it is unlikely that the students miss the advanced words, which are the important lexical sophistication measures. It is different from lexical density since the value of lexical

Density can be lower by adding more repetitive words or fillers, which does not have to do with lexical sophistication. A similar thing happens with the lexical variation. The researcher uses Type Token Ratio to calculate students' lexical variation. In Type-Token Ratio (TTR), the fillers or greetings which the students are likely to add can increase the variation of their lexical choice. Therefore, even though they may decrease their lexical variation by telling repetitive words, greetings and some fillers make the ratio still similar.

3.2. The Comparison of Students' Syntactic Complexity in Writing Production and Oral Performance

In this study, the researcher employs five indices to measure students' syntactic complexity, which covers length-based, clausal subordination-based, and phrasal complexity measures. Those five indices are mean-length of a sentence, mean-length of T-Unit, clause per sentence, verb phrase per T-unit, and coordinate phrase per T-unit. As proposed by Lu (2011), measuring EFL learners' syntactic complexity in two different areas (writing and speaking) is likely to be different since clausal subordination is typically higher in a spoken text while phrasal complexity is higher in written text (Bulté & Housen, 2018; Lu, 2011; Mazgutova & Kormos, 2015). Therefore the present study does not only employ the most common measurements of syntactic complexity (mean length of sentence and mean length of T-Unit) but also tried to satisfy both sides by employing typical measurements for speaking (clause per sentence) and for writing (verb phrase per T-Unit and coordinate phrase per T-Unit). The following table displays the frequency of each measurement for both texts.

Table 3 Data Display of Syntactic Complexity Between Writing And Oral Performance

No.	Participant	MLS		MLT		C/S		VP/T		CP/T	
		W	S	W	S	W	S	W	S	W	S
1	A	19	16.19	19.87	16.19	2.41	3.11	3.83	3.11	0.61	0.44
2	B	12.38	11.82	12.64	11.82	1.76	2.27	2.32	2.27	0.41	0.41
3	C	13.62	13.26	25.61	13.26	3	1.95	3.61	1.95	0.44	0.26
4	D	18.48	13.86	27	13.86	5	2.39	4.23	2.39	0.69	0.29
5	E	11.13	10.68	14.82	10.68	1.88	1.84	2.53	1.84	0.24	0.08
6	F	15.59	15.12	15.41	15.12	1.77	2.64	2.73	2.64	0.27	0.27
7	G	18.04	17.39	17.14	17.39	1.55	2.68	2.48	2.68	0.48	0.5
8	H	17.96	16.72	12.78	16.72	2.33	2.07	2.15	2.07	0.37	0.31
9	I	13.93	13.93	14.88	13.93	1.93	2.47	2.31	2.47	0.19	0.27
10	J	13.08	11.89	17.16	11.89	2.33	2.34	3	2.34	0.24	0.14

Based on the table above, it can be seen that from each indice of syntactic complexity proposed by this study, students' writing production and speaking performance is relatively different. Their mean length of sentence ranges from 11.13 words per sentence to 19 words per sentence in their writing and 10.68 words per sentence to 17.39 words per sentence in their speaking performance. From this data, we know that they tend to make a longer sentence in their writing text than speaking performance.

Concerning the mean length of T-unit (MLT), the study result shows that students produce 12.64 words per T-unit to 27 words per T-unit in their written text and 10.68 words per T-unit to 17.39 words per T-unit. Like MLS, the students also produce higher MLT in their writing than their oral performance.

In term of clause per sentence (C/S), the students create 1.55 clauses per sentence to 5 clauses per sentence in their writing and 1.84 clauses per sentence to 3.11 clauses per sentence. Looking at this result, we can conclude that students tend to make a compound, complex or compound-complex sentences rather than simple sentences. It shows that students generally create a complex enough sentence in their writing production and oral performance, although they still produce higher C/S in their writing than in the speaking one.

Furthermore, students' verb phrases per T-unit ranges from 2.15 verb phrases per T-unit to 4.23 phrases per T-unit in their writing and 1.84 verb phrase per T-unit to 3.11 verb phrases per T-unit in their speaking performance. The result is consistent with the clause per sentence (C/S) rule, which states that each clause should be completed by at least one verb phrase. Because the ranges of C/S and VP/T are in a similar range, it can be concluded that students used more than one verb phrase in a sentence, resulting in more complex language production.

The last measurement is coordinate phrase per T-unit which ranges from 0.19 phrase per T-unit to 0.69 phrase per T-unit in their writing and 0.08 phrase per T-unit to 0.5 phrase per T-unit. The result shows a low index of coordinate phrases used in the text they write or perform.

From both language production, their coordinate phrase per unit is not higher than 1, which means students rarely use coordinate phrases in their text. Unlike the verb phrase that they use frequently, the coordinate phrase is unlikely to be the choice of students in their text. The researcher makes an assumption that the students tend to make verb phrases rather than coordinate phrases since the theme of the text is a persuasive speech, so they emphasize the actions they should make to move people with their text. Also, they tend to use a subordinate phrase than a coordinate phrase or stop the sentence frequently without combining it with a coordinate phrase

Table 4 The Comparison of Syntactic Complexity in Writing Production and Oral Performance

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	MLS Writing - MLS Speaking	1,234440	1,424004	,450310	,215769	2,253111	2,741	9	,023
Pair 2	MLT Writing – MLT Speaking	3,644380	5,459147	1,726334	-,260858	7,549618	2,111	9	,064
Pair 3	C/S Writing – C/S Speaking	,0209000	1,1074734	,3502138	-,7713388	,8131388	,060	9	,954
Pair 4	VP/T Writing – VP/T Speaking	,5424100	,7231163	,2286694	,0251238	1,059696 2	2,372	9	,042
Pair 5	CP/T Writing – CP/T Speaking	,0248100	,2492358	,0788153	-,1534825	,2031025	,315	9	,760

The table above shows the association between each indice of syntactic complexity in writing production and oral performance. According to the table, the comparison of mean length of sentences of students' production shows a significant difference between their writing and speaking performance. The Sig. (2-tailed) value is less than 0.05, indicating that the students' writing production differs significantly from their speaking performance. Table 3.3 shows that students' MLS is higher in their writing production than in their oral performance. It relates to the actual condition when participant presented their speech which involves nervousness, forgetness, and stagefright. These factors can lead them to simplify or to omit several words when they perform the speech so the speech is slightly different with their writing.

The second comparison is the mean length of T-Unit (MLT) which shows the sig. (2-tailed value) more than 0.05 indicating that the students' MLT is not significantly different between their writing production and speaking performance. MLT is considered more accurate to see syntactic complexity in second language production than MLS; therefore, it makes MLT one of the most common indices used in measuring syntactic complexity (Bulté & Housen, 2014; Cumming et al., 2005; Lu, 2011). Concerning MLT, the result showed in Table 3.2 also indicates that students' MLT is higher in their writing production than in speaking performance. It is likely to have similar reasons for measuring MLS because these two measurements are relatively similar by dividing the total words by the number of sentences (MLS) and T-Units (MLT).

The third pair compares clause per sentence (C/S) the students produce in their writing and speaking performance. Clause subordination associates with the spoken text (Lu, 2011) because in several studies, it shows that spoken text produced more clause subordination. This study shows the opposite finding with the previous one that the participants in this study produce more clauses in their writing production, although the gap between them is not way significant. It is confirmed by the value of sig. (2-tailed) of comparing C/S that is more than 0.05 which means the difference is nt significant. The different results showed in this study and the previous one might be influenced by the different research design in which the previous study is a longitudinal study, so the confirmation of how C/S associates with spoken text is gained after sequences of testing in longitudinal research.

The fourth and fifth comparisons associate with the writin text. Verb phrase per T-Unit (VP/T) and coordinate phrase per T-Unit (CP/T) are claimed to be better predictors to measure syntactic complexity in writing text than the clause subordination (Biber et al., 2014; Kyle & Crossley, 2018; Penris & Verspoor, 2017). This study aligned with the previous research that shows that students' VP/T and CP/T are higher in writing text than their speaking performance. However, there is a significant difference between students' writing and speaking performance in VP/T but not in CP/T. The comparison of VP/T from writing and speaking shows sig. (2-tailed) value is 0.042 which is less than 0.05 and indicating a significant different between the two language productions. Meanwhile, the comparison of CP/T from writing and speaking resulted in sig.(2-tailed) 0.760 which is higher than 0.05. then indicates that there is no significant difference between the two texts.

3.3. Comparing Students' Speaking and Writing Fluency

As already mentioned in the methods section, the researcher uses product-based criteria of measuring students' writing fluency, such as speed of text production, sentence length and T-unit length. The speed of text production is measured by dividing total words with the total time spent in creating the writing. While the sentence length and T-unit length are measured by dividing total words by the total sentences (sentence length) or the total number of T-unit (T-unit length). The result of the calculation is presented in the table below:

Table 5 Students' Writing Fluency

No	Participant	Text Production (word/minutes)	Sentence Length (Words/ sentence)	T-Unit Length (words per T-Unit)
1	A	6.62	20.7	19.9
2	B	4.02	13.2	12.6
3	C	6.68	28.8	25.6
4	D	5.08	39	27
5	E	3.65	15.8	14.8
6	F	4.91	15.4	15.4
7	G	5.21	16.4	17.1
8	H	5	16.4	12.8
9	I	3.45	15.9	14.9
10	J	6.22	17.9	14.1

Table 5 shows that students' text production speed ranges from 3.45 words per minute to 6.68 words per minute. In this speed, it can be considered as low performance. However, according to (Abdel Latif, 2013), writing consists of various processes when composing texts, including planning, monitoring, reviewing, retrieving, and transcribing. Therefore, according to Flower and Hayes in (Abdel Latif, 2013) writers typically devote significantly more time to planning, monitoring, reviewing, and retrieving than they do to text transcription as a result, in some cases, 70% of composing time is actually a pause-time. Concerning other measurements such as sentence length and T-unit length, they provide a result-based fluency of writing in which the value of sentence length ranges from 13.2 words per sentence to 39 words per sentence and in terms of T-unit length, the value ranges from 12.6 words per T-unit to 27 words per unit. Taking a look at the extreme value, it is pointed out to participant 4 in which his sentence length and T-unit length are way different from other participants. It can be concluded that this participant creates a longer sentence than other participants.

For analyzing the students' speaking fluency, the researcher employs criteria from Kormos (2006) such as breakdown of fluency, repair and speed. Breakdown of fluency is indicated by the number of silent pauses every 100 words. In repair criteria, there are two measurements: number of corrections per 100 words and number of repetitions per 100 words. The last measurement is speed which is indicated by the number of words produce every minute. The students' speaking fluency displays in the following table:

Table 6 Students' Speaking Fluency

No	Participant	Breakdown	Repair		Speed
		(Number of silent pauses/100 words)	(Number of Correction/ 100 words)	(Number of repetition/ 100 words)	(Number of words/ minute)
1	A	4.3478	1.8307	1.8307	149.1468
2	B	7.6923	4.2308	4.6154	83.3333
3	C	4.7619	0.5952	0.3968	80.2548
4	D	3.3505	3.0928	1.2887	153.3597
5	E	7.4906	2.6217	1.4981	91.7526
6	F	5.0100	5.0100	1.0020	128.6082
7	G	2.4641	0.4107	0.2053	124.8718
8	H	3.0928	1.4433	2.8866	116.0287
9	I	3.8278	1.4354	0.9569	125.1497
10	J	3.0593	1.9120	1.5296	120.7852

From Table 6, the study revealed that participants of the study pause the speech from 2.4 seconds to 7.49 seconds every 100 words. The participant with the least pause time is participant 7 with minimum correction and repetition in his speech. His speed is also considered higher than other participants. Then, participant 7 can be considered as a fluent speaker. On the other hand, participant 2 makes the most pause time compared with other participants with considered correction and repetition. Also, her speed is categorized as a slow speed compared with other participants. Then participant 2, can be considered as a not fluent speaker.

Students' speaking and writing fluency is not actually comparable since the measurements used in these two language productions are quite different. In writing fluency, the product-based measurements are carried out to analyze the students' writing fluency, while it is impossible to employ the same measurements for speaking fluency. Speaking fluency demands process-based measurements in which every stage of performance is worth note-taking. Also, in writing fluency 70 % is silent pause which participants think and plan what they want to write. The comparison can be done by looking at the extreme value and noting whether this extreme value happens in both fluency or only in one of them. Talking about the extreme point in writing fluency, it is pointed out to Participant 4 which create a very long sentence as the indication of his writing fluency. Comparing his achievement in writing fluency, it seems that the result in speaking flency is not high. Since in speaking fluency, there is Participant 7 who produces the least pause time in speaking fluency with few numbers of correction and repetition. It seems that fluency in writing does not go in line with speaking fluency.

4 Conclusion

Due to a shortage of comparative research on linguistic complexity and fluency, this study seeks to fill that gap by examining whether or not students' linguistic complexity differs between their writing and speaking performance. This study begins with the hypothesis that L2 learners have higher linguistic complexity and fluency in their writing than in their speaking performance since in the writing section, they can be very careful at selecting the words and sentences they used, and they take their time easily than when doing a speaking performance. Nervousness, forgetness, and stagefright can lead them to have a lower speaking performance than their writing production. It is natural to do since presenting the speech lively in front of their friends might not be easy to do even though they have memorized the speech.

This study's findings indicate that their writing's lexical complexity is significantly different from their speaking performance in one aspect, lexical density. Their writing is denser than their speaking performance based on the result of the study. Nevertheless, the lexical sophistication and lexical variation are not significantly different, meaning their writing and speaking are sophisticated and varied almost in the same way.

Concerning their syntactic complexity, two indices show significant differences between the students' writing and speaking performance, they are MLS and VP/T. The students produce more words and verb phrases in their writing than in their speaking performance. Meanwhile, other measurements such as MLT, C/S, CP/C show an insignificant difference between the two performances. Their L1 writings have a significantly higher lexical complexity than their L2 writings.

Despite the potential contribution of the current research findings to second language productivity, the researchers admitted that this study had several limitations. First, the small number of participants in this study may influence the calculation of linguistic complexity. With a higher number of participants, generalization of measuring linguistic complexity can be achieved. Second, at the beginning of this study, it is already confirmed that the researcher used product-based measurement of students' writing fluency which may not depict the actual fluency of the students in creating their writing. Therefore, the present researcher suggests using a process-based measurement in analyzing the students' writing fluency to visualize the actual fluency of the students in writing. Thirdly, this is a result-based study, indicating a deficiency in the monitoring process during which students create their writings. As a result, it is possible that students used an online dictionary and other internet resources to assist them in completing these writings. As a result, further researchers are strongly advised to complete a monitored-writing assignment.

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