

## Gender Variation in the Writings of Ghanaian Colleges of Education Students: A Study of Syntactic Complexity

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### ABSTRACT

This study explored the differences in the writings produced by both male and female students in colleges of education in Ghana with respect to syntactic complexity. The study was based on a corpus of two hundred examination essays which were collected from two hundred students in Assin Fosu, Wesley and Presbyterian colleges of education who took the English language Studies course (FDC 211) in 2018/2019 academic year. The study adopted a descriptive design, involving qualitative and quantitative methods. The analysis showed that the male students were more syntactically complex than the female students in their writings. The study established clear variations in the areas of length of production unit, sentence complexity, amount of subordination and coordination and particular structures. It has therefore upheld the difference version of gender and language theory as compared to the discursive theory. Implications and areas for further research are also discussed.

### BACKGROUND TO THE STUDY

In recent times, the language of males and females has been studied scientifically. While some researchers have documented some perceived gender differences in language use (Lakoff, 1975; McMillan, Clifton, McGrath & Gale, 1977), others have doubted the existence of any such differences (Dubios & Crouch, 1975). Herring (1994) argues that although men and women from a given social class belong to the same speech community, they may use different linguistic forms. Graddol and Swann (1989) have also hinted the possibility of some form of gender variation in any language at all linguistic levels.

Lakoff (1975) reports the use of hedges, tag questions, intensive adverbs, hyper-politeness, etc. as typical of women's language, and Mulac, Weiman, Widenmann, and Gibson (1988) have confirmed the excessive use of questions in women's contributions to dyadic interactions. Some studies have also revealed gender variations in the likelihood of being wordy (Mulac & Lundel 1994), offering opinion (Mulac, Studley, & Blau, 1990), and negotiation (Mulac, Seibold, & Ferris, 2000). However, other studies have failed to confirm these findings (Newman et al., 2008; Thomson

& Murachver, 2001). Thomson and Murachver (2001), for instance, found no significant gender variation in the use of questions, compliments, apologies, opinions and insults during e-mail communication.

While these previous studies have produced significant insights into gender variation, as noted by Baron (2004), most of such studies focused more on specific lexical items in spoken language as compared to written language. More recently, Obeng (2012) has also lamented a gap in the gender variationist research when it comes to the syntactic level of language. Generally, studies on syntactic complexity have compared native speakers to non-native speakers of English (Nasseri, 2016). Studies that examined gender variation in syntactic complexity either focused on children or the prose genre (Waskita, 2008).

Significantly, studies that have attempted to examine gender variation in syntactic complexity have produced contrasting findings. While some revealed females' superiority in complexity to that of men (Eriksson, 2012; Punter & Burchell, 1996), other researchers found males' superiority in complexity to that of females (Aperoch, 2016). Given these contrasting results coupled with the fact that

these researches are rare in Ghana and also on the basis that these researchers mainly based their analysis on the T-unit, it is important for such a study to be conducted in Ghana, more importantly using metrics with a wide range of indices that adequately measure real complexity. Ortega (2012) holds that T – unit analysis ignores some useful information such as coordination and noun clausal features embedded in the noun phrase which Biber, Gray and Poonpon (2011) argue are also important indicators for syntactic complexity for certain groups of learners. The present study, therefore, examines syntactic complexity variation in the writings of students of colleges of education in Ghana, using Lu's (2010) indexes for measuring complexities.

### Theoretical Review

Theories abound on the relationship between gender and language. One of such theories is the deficit theory, which sees women as disadvantaged language users, with their language deviating from an implicit male norm. It describes male language as stronger, prestigious, and more desirable. Some of the proponents of this theory are Otto Jespersen and Robin Lakoff. According to Jespersen (1922), men have many great expressions peculiar to them, which women understand but never pronounce themselves. On the other hand, women have words and phrases which men never use. Thus, it happens that in a conversation, it often seems as if women have another language than that of the men. According to Jespersen, women's language is inferior to that of the men. He also relates this deficiency in women's speech in their use of hyperbole, incoherent sentences, inferior command of syntax, less vocabulary and non-innovation approach to language.

Jespersen's (1922) view is supported by Holmes (1993), who also presented women's speech as deficient compared to men's speech. Among other things, Holmes argues that women tend to focus on the affective functions of an interaction more than men do; women tend to use linguistic devices that stress solidarity more than men; women tend to interact in ways which will maintain and increase solidarity (especially in formal context) while men tend to interact in ways which will maintain and increase their power and status, and also women are stylistically more flexible than men. The deficiency or inferiority of women's speech makes them employ prestige variants more frequently (McGroarty, 1996). In explaining the deficiency in women's speech, Lakoff (1975) argues that women are socialized into behaving like ladies (linguistically and in other ways too) and that this, in turn, keeps them in their place because "ladylike" precludes being "powerful" in our culture (Akhter & Kusakabe, 2014). The present study draws much inspiration from this theory as it is on the basis that males use language differently from females that the researchers sought to find out which gender (male, female) is more syntactically complex.

Another theory is the dominance theory. The dominance theory is rooted in the assumption that men and women are believed to inhabit a different cultural and linguistic world, where power and status are unequally distributed. The theorists associated with this theory emphasise that in mixed-sex

conversations, men are more likely to interrupt than women. They reveal that interruptions are evidence of a form of dominance and speculate that male control of macro-institutions in society is similarly exhibited through maintaining control at the micro-level of conversations (Zimmerman & West, 1975). Spender (1980) similarly argues that the world is a male-dominated society (patriarchy) and male language is treated as a norm. She argues that it is difficult to challenge this power (patriarchy) because the way we think of the world is part of and reinforces the male power. Thus, men and women speak differently because of evidence of male privilege in society.

One possible limitation of Zimmerman and West's (1975) work is summarized by Beattie (1982) who questions whether interruption necessarily means dominance. Beattie questions whether interruption could not arise from other sources. He claims that Zimmerman and West might have had one articulate man in their study (subject) which has a disproportionate effect on the whole study. Beattie himself claims to have recorded 10 hours tutorial discussion of 557 interruptions which he found no significant difference between the sexes. Regardless of the criticism, this theory is important to the present study as the present study sought to find out whether indeed the difference in privileges accrued to men and women in society reflects in the way they write.

Again, there is the difference, theory. Tannen's (1990) book, *You just don't Understand* has been a major work people refer, to when talking about the difference theory. In the book she posits that men and women use language differently because of basic difference between them due to socialization and experience. In dealing with cross-gender communication, Tannen argues that the male and female genders are often presented as being two separate cultures and this influences the way each talks. She holds that men and women express themselves in different ways and for different reasons.

To Tannen (1990), men use communication to maintain independence, establish status from others, and share facts and figures while women talk to maintain intimacy, to connect them emotionally to express feeling and build rapport. Tannen's work is categorized into six, each contrasting the others in pair. They are: status versus support, understand versus advice, information versus feelings, orders versus proposal, conflict versus compromise and independence versus intimacy. Though Tannen agrees that men usually seek to dominate women, she isolates herself from the dominance approach, arguing that domination is not necessarily the case in male and female conversation. This theory is quite significant to the present study as this study ultimately sought to find out if, indeed, gender which is socially constructed, really has any influence on the way males and females speak and write.

The final theoretical approach to be discussed is the discursive approach. Discursive approach looks at how gender is constructed through language within a cultural framework. The theory sees gender as something that is enacted on a daily basis through discourse. Deborah Cameron, a theorist within the discursive field of language and gender, argues that

some versions of gender stereotype can change according to response to shifts in the economic climate. She stresses that how such shifts are interpreted and by whom influences the reproduction of political ideology (Cameron, 2006).

The understanding of this theory is in contrast to seeing gender as a property of persons or a set of adjectives associated with a person. To Cameron (2006), the era where females were viewed as inept communicators is over and more lately, men have been ascribed those characteristics not because the actual communicative behaviour of men and women have changed but rather because male behaviour has been reframed as dysfunctional and damaging.

Indeed, if this theory is anything to go, then it defies the idea of women's use of language. It presupposes that there is no specific language use associated with either males or females. Thus, there is no specific difference between males' and females' language. The theory is very relevant to the study as it will confirm whether, indeed, there is no difference between males' and females' written language.

## METHODOLOGY

### Research Design

The research design that was used in this study is the descriptive design, involving a quantitative content analysis of students' examination scripts. The quantitative research approach is most suitable for the research questions which sought to find out which gender is more syntactically complex in their writing of argumentative essays. The descriptive design, according to Gay (as cited in Obeng, 2012), involves the collection of data in order to test the hypotheses or research questions on the subject of the study. Obeng (2012) argues that in a descriptive design, the researcher draws a sample from the population of interest and generalizations are made, taking into consideration their responses. According to Osuala (1991), descriptive design is practical to the researcher as it identifies present conditions and points to the present needs; it is regarded by social scientists as the best, especially where large populations are involved. To Amedahe (2002), the design is an accurate description of activities and it goes beyond fact finding. In this study, we settled on the descriptive design because it helped to describe the features of syntactic complexity and their occurrence as they are (Creswell, 2003). Again, given the large population we had to deal with, the design gave us the opportunity to select a sample from the population, draw conclusions, and make generalizations.

### Population and Sampling

The population for the study comprised level 200 students of the 46 colleges of education in Ghana. The target population for the study was level 200 students of Assin Fosu (420), Presbyterian (435) and Wesley (440) Colleges of Education for 2018/2019 academic year, making 1,295 students. Out of the number, 721 were males while 574 were females. The scripts of the students were accessible to the researcher to use for analysis. Assin Fosu College of Education is in

Assin Fosu, Central Region, Wesley College of Education is in Kumasi, Ashanti Region, and Presbyterian College of Education is in Akropong Akwapim in the Eastern Region. These colleges and regions were purposely selected, firstly, to ensure that data collected would be diverse enough to meet the primary objective of the study. Secondly, these colleges are mixed colleges and were, therefore, fit for the purpose of the study as we sought to examine the variation that exists between males' and females' writings in relation to syntactic complexity.

The sample size for this study was 200. Kirk (1995) argues that when the population is beyond 5,000, the sample size of 400 is acceptable. In the same vein, Krejcie and Morgan (as cited in Cohen, Manion & Morrison, 2000) suggest a sample size of 346 for a population of 3,500 as reasonable. Similarly, Singh and Masuku (2014) suggest a sample size of 286 and 333 for a population of 2,000 and 3,000 respectively. With a target population of 1,295, a sample size of 200 was deemed reasonable by the researcher. The stratified sampling was used to classify the students into males and females using their names. The techniques gave each of the level 200 students an equal chance to be selected.

Having divided the students into males and females using the stratified sampling, we used systematic sampling to select 70 scripts from Wesley College (35 each from males and females), 66 from Presbyterian College (33 each from males and females), and 64 from Assin Fosu College (32 each from males and females) for the study. According to Bellhouse (2005), the systematic sampling technique is the selection of a sample whereby there is a random choice at the beginning of the population list and a selection of every unit at equal intervals afterwards. That is, choosing samples by selecting every *k*th sampling frame member where *k* represents the population divided by the desired sample size.

### Research Data

The data for the study were students' scripts of 2018/2019 academic year. The researchers settled on examination essay because it is the most recognised and frequently used genre in tertiary literacy portfolios (Horowitz, 1986, 1989; Johns, as cited in Afful, 2005). The scripts were derived from level 200 students of the selected colleges who took English Language Studies course in 2018/2019 academic year; therefore, 200 scripts were used. Each of the script contained an average of 300 words. Using examination scripts, the researchers were able to get the data in its 'natural' state. This is because examination scripts prevent interference by the researcher. The difficulty associated with using examination scripts has been examiners' incorporation and alteration (Obeng, 2012) and this was curbed by photocopying the needed scripts before they were marked.

### Data Analysis Procedure

The selected scripts were labelled for easy identification (F1, F2 etc. for female scripts and M1, M2 etc. for male scripts). The scripts were typed, edited and were fed onto a Syntactic Complexity Analyser to identify the various features the

researchers intended to use to determine the syntactic complexity level of the scripts.

The syntactic complexity analyser was developed by professor Lu Xiaofei at Pennsylvania University in 2010 and it is accessible to the public on the website <http://www.peronal.psu.edu/xx133/downloads/12sca.html>. The software analyses data using Stanford Parser and also Tree-gex. Lu (2010) explains that the system takes in input of written English language sample in plain text format and outputs fourteen indices of syntactic complexity of the sample based on the fourteen measures. This process, to him, is manifested in the following two stages: In the pre-processing stage, the system calls a state-of-the-art syntactic parser to analyze the syntactic structures of the sentences in the sample. The output is a parsed sample that consists of a sequence of parse trees, with each parse tree representing the analysis of the syntactic structure of a sentence in the sample. In the syntactic complexity analysis stage, the system analyzes the parsed sample and produces fourteen syntactic complexity indices based on the analysis, in two steps: firstly, the syntactic complexity analyzer retrieves and counts the occurrences of all relevant production units and syntactic structures necessary for calculating one or more of the fourteen measures in the sample, and then calculates the indices using those counts. The definition assumed by the sentence segmentation module in the Stanford parser is compatible with the following definitions:

*Sentences:* A sentence is a group of words delimited with one of the following punctuation marks that signal the end of a sentence: period, question mark, exclamation mark, quotation mark, or ellipsis (Hunt, 1965).

*Clause:* A clause is defined as a structure with a subject and a finite verb (Hunt, 1965), and includes independent clauses, adjective clauses, adverbial clauses, and nominal clauses.

*Dependent clause:* Based on the definition of clause, a dependent clause is defined as a finite adjective, adverbial, or nominal clause (Hunt, 1965).

*T-units:* A T-unit is one main clause plus any subordinate clause or non-clausal structure that is attached to or embedded in it (Hunt, 1970).

*Complex T-units:* A complex T-unit is a T-unit that contains a dependent clause (Casanave 1994).

*Coordinate phrase:* Adjective, adverb, noun, and verb phrases are counted in coordinate phrases (Cooper, 1976).

*Complex nominals:* Complex nominals comprise (i) nouns plus adjective, possessive, prepositional phrase, relative clause, participle, or appositive, (ii) nominal clauses, and (iii) gerunds and infinitives in subject position (Cooper, 1976).

After the occurrences of the production units and syntactic structures in the syntactically-parsed writing sample have been retrieved using Tregex, the syntactic complexity analyzer uses the counts of those occurrences to compute the syntactic complexity of the writing sample. The final output is fourteen numeric scores, each of which is an index of the syntactic complexity of the writing sample based on one of the fourteen measures.

The measures can be categorized into the following five types: The first type consists of three measures that gauge length of production at the clausal, sentential, or T-unit level, namely: mean length of clause (MLC), mean length of sentence (MLS), and mean length of T-unit (MLT). The second type consists of a sentence complexity ratio (clauses per sentence, or C/S). The third type comprises four ratios that reflect the amount of subordination, including a T-unit complexity ratio (clauses per T-unit, or C/T), a complex T-unit ratio (complex T-units per T-unit, or CT/T), a dependent clause ratio (dependent clauses per clause, or DC/C), and dependent clauses per T-unit (DC/T). The fourth type is made up of three ratios that measure the amount of coordination, namely: coordinate phrases per clause (CP/C), coordinate phrases per T-unit (CP/T), and a sentence coordination ratio (T-units per sentence, or T/S). The fifth and final type consists of three ratios that consider the relationship between particular syntactic structures and larger production units: complex nominals per clause (CN/C), complex nominals per T-unit (CN/T), and verb phrases per T-unit (VP/T). Below is a summary of the measure code definition for the fourteen syntactic complexity measures.

#### Measure Code Definition

##### Type 1: Length of Production Unit

- Mean Length of Clause (MLC) – number of words/number of clauses
- Mean Length of Sentences (MLS) - number of words/number of sentences
- Mean Length of T-units (MLT) – number of words/number T-units

##### Type 2: Sentence Complexity

- Sentence Complexity Ratio (C/S) – number of clauses/number of sentences

##### Type 3: Subordination

- T-unit Complexity Ratio (C/T) - number of clauses/number of T-units
- Complex T-unit ratio (CT/T – number of complex T-units/number of T-units
- Dependent clause ratio (DC/C) – number of dependent clauses/number of clauses
- Dependent clauses per T-unit (DC/T) – number of dependent clauses/number of T-units`

##### Type 4: Coordination

- Coordinate phrases per clause (CP/C) – number of coordinate phrases/number of clauses
- Coordinate phrases per T-unit (CP/T) – number of coordinate phrases/number of T-units
- Sentence coordination ratio (T/S) – number of T-unit/number of sentences

##### Type 5: Particular Structures

- Complex nominals per clause (CN/C) – number of complex nominals/number of clauses
- Complex nominals per T-unit (CN/T) - number of complex nominals/number of T-units
- Verb phrase per T-unit (VP/T) – number of verb phrase/number of T-units (Lu, 2010).

The results of the analysis were fed onto SPSS to determine the statistical difference between the males and females, using independent T-test.

Which gender is more complex in the writing of argumentative essays? In order to answer this question, fourteen indices used for measuring syntactic complexity were utilized. These measurements were grouped into five types including length of production, sentence complexity ratio, amount of subordination, amount of coordination and the relationship between particular syntactic structures and larger production units. The subsequent section presents the results for the gender difference across the five types. The independent T-test was utilised for this study since the goal was to find whether there was significant difference in syntactic complexity between males and females. An independent t-test is used when comparing mean scores of a number of continuous variables for two distinct groups of subjects (Pallant, 2010).

Pallant (2010) argues that before t-test is used, there are some assumptions that should be noted: the level of measurement for the dependent variables should be continuous; the sampling technique should be random; observations that make up the data must be independent of one another, and that the population in which the data was selected should be normally distributed. Also, there is the assumption of the homogeneity of variance (variability of scores for each of the groups is similar). This is tested using the Levene tests for equality of variance. When the Levene tests provide a significant value of less than .05, then the assumption of homogeneity of variance is violated hence the output for equal variance not assumed is used. However, if the value is greater than .05, then equal variance assumed is used. This study met all the assumptions of independent t-test.

## RESULTS

### Socio-demographic Characteristics of Respondents

The section presents the demographics of the respondents. A total of 200 scripts were sampled for the study. All the 200 participants were level 200 students from the various colleges used for the study. There was the same number of males as there was for females (100 for each gender). About 32.0% of the male students were from Assin Fosu, 33.0% were from Presbyterian and 35.0% were Wesley College students. The total percentages of female students were as follows: 32.0% from Assin Fosu College, 33.0% from Presbyterian College and 35.0% from Wesley College. Out of the 200 participants, 32.0% of the participants were students from Fosu College, 33.0% were Presbyterian College students and 35.0% of them were students from Wesley College. Table 1 presents the details.

The summary statistics presents the descriptive of the variables used for the study. It provides the maximum-minimum and mean values for the fourteen indices of syntactic complexity measures as well as quality of the augmentative essay written by students. The maximum values for MLS and MLT were greater than all the other variables. Among the fourteen indicators, Coordinate phrases per clause (CP/C)

had the least maximum value. Also, the results revealed that among the minimum values for the fourteen indicators, VPT, CPT and CPC had 0 as their minimum values. The mean values for MLS, MLT and MLC were greater than the other variables. Also, based on the written test, the minimum-maximum value was 12-42 with a mean of 22.67 for the 200 test takers. Table 2 presents the details.

### Gender Variations in Length of Production Units in Syntactic Complexity

This section presents results on the first type of measures for syntactic complexity: length of production units proposed by Lu (2010). The length of production has three main indices: Mean Length of Clause (MLC), Mean Length of Sentences (MLS) and Mean Length of T-units (MLT). Table 3 presents the summary of results of the gender variation for the length of production unit.

An independent sample t-test was conducted to compare the Length of Production Unit and Sentence Complexity Ratio for male and female students from the three colleges. The findings showed that the mean length of sentence (MLS) for males (Mean=27.0423.90) was higher than the mean length of sentence (MLS) for females (Mean=24.0325.77). The results revealed a significant difference for the mean length of sentence between males and females (since  $p\text{-value} = .029 < \alpha\text{-level} = 0.05$ ). The results also showed that the mean length of T-units (MLT) for males (Mean=24.1972.13) was higher than that of females (Mean=22.1622.10). The difference between

**Table 1.** College and Gender Distribution

College / Gender	Male (100)	Female(100)	Total (200)
Fosu college	32 (30.0)*	32(31.0)	64(32.0)
Presbyterian college	33(32.0)	33(33.0)	66(33.0)
Wesley College	35(38.0)	35(36.0)	70(35.0)

\*Percentages in Parenthesis

**Table 2.** Summary Statistics of the Variable

Variables	N	Minimum	Maximum	Mean	Std.
MLS	200	10.5000	95.5000	25.5374.84	9.7908.244
MLT	200	8.9167	95.5000	23.1797.11	8.6575.452
MLC	200	7.8000	30.6667	11.1616.97	2.6739.963
CS	200	1.2353	5.0000	2.3254.70	0.6321.489
VPT	200	0	4.8750	2.8659.77	0.6125.940
CT	200	1.2105	4.2500	2.0921.11	0.4880.375
DCC	200	0.1905	3.2500	0.5356.41	0.2898.656
DCT	200	0.2353	2.3750	1.0267.23	0.4105.379
TS	200	0.8421	1.6667	1.1071.31	0.1496.815
CTT	200	0.2353	1.0000	0.5833.59	0.1608.577
CPT	200	0	1.3750	0.5291.67	0.2602.905
CPC	200	0	0.7368	0.2705.76	0.1457.111
CNT	200	1.3333	4.7500	2.5904.68	0.6632.453
CNC	200	0.1147	1.9231	1.2584.91	0.2844.093
QUALITY	200	12	42	22.67	2.908

**Table 3.** Length of Production Unit Complexity Comparison

Variable	T-test	P-value	Mean	
			Male	Female
Mean Length of Sentences (MLS)	2.194	.029*	27.0423.90	24.0325.77
Mean Length of T-units (MLT)	1.670	.097**	24.1972.13	22.1622.10
Mean Length of Clause (MLC)	.238	.812	11.2068.94	11.1165.00

\*Significant at 0.05; \*\*significant at 0.1

male and females for the mean length of T-units was found to be significant at alpha level of 0.1 (since  $p\text{-value} = .097 < \alpha\text{ level} = 0.1$ ). Also, the mean length of clause (MLC) for males (Mean=11.2068.94) was higher than that of their female (Mean=11.1165.00) counterparts. However, the difference was not significant (since the  $p\text{-value} = .812 > \alpha\text{ level} = .05, 0.1$ ). With regard to the sentence complexity ratio, the score for males (Mean=24.099.99) was found to be greater than that of females (Mean=22.409.40). The study also found a significant difference for the sentence complexity ratio between males and females ( $p\text{-value} = .058 < \alpha\text{ level} = 0.1$ ).

### Gender Variations in Sentence Complexity Ratio, Subordination and Coordination Syntactic Complexity

In measuring syntactic complexity, Lu (2010) categorized some eight indices into three main types. This section presents summary of results of gender difference in the three major types: sentence complexity ratio, subordination and coordination syntactic complexity. The sentence complexity ratio had only one index: number of clauses per sentence (C/S). The subordination structures are associated with four indices: Complex T-unit ratio (CT/T), T-unit Complexity Ratio (C/T), Dependent clause ratio (DC/C) and Dependent clauses per T-unit (DC/T). The coordination structures are also addressed by three indices: Sentence coordination ratio (T/S), Coordinate phrases per T-unit (CP/T) and Coordinate phrases per clause (CP/C). Table 4 presents the details of results.

An independent T-test was conducted to compare the density of subordination and coordination as well as sentence complexity ratio between males and females from the three colleges. The findings of the study revealed that the number of clauses per sentence (C/S) produced by males (Mean=2.4099.99) were much higher than the number of clauses per sentence (C/S) produced by females (Mean=2.2409.40). The difference between males and female for the sentence complexity ratio was found to be significant (since  $p\text{-value} = .058 < \alpha\text{ level} 0.1$ ).

With regard to the subordination syntactic complexity, all the four indices showed significant difference between males and females from the three colleges. The number of complex T- units per number of T-units (CT/T) produced by males (Mean=0.6023.36) was greater than that of

females (Mean=0.5643.82). The difference between males and females for the Complex T-unit ratio was significant at alpha level of one percent ( $p\text{-value} = .095 < \alpha\text{-level} = 0.1$ ). The results also revealed a significant difference between males and females for T-unit Complexity Ratio (C/T) (Since  $p\text{-value} = .032 < \alpha\text{ level} = .05$ ). Specifically, the average number of clauses per number of T-units (C/T) produced by males (Mean=2.1659.07) was much higher than females (Mean=2.0183.16). Males (Mean=0.6313.42) were also found to produce higher number of dependent clauses per number of clauses when compared to females (Mean= 0.4399.41). The difference between them for the dependent clause ratio (DC/C) was therefore found to be significant (since  $p\text{-value} = .00 < \alpha\text{ level} = 0.01$ ). Again, males (Mean = 1.1237.11) produced higher dependent clauses per T-unit (DC/T) than females (Mean=0.9297.36). The difference was significant at.01 ( $P\text{-value} = .001 < \alpha\text{ level} = 0.01$ ).

With regard to the coordination structures complexity, there was no significant difference between males and females for all the three indices under coordination structures. The density for sentence coordination ratio (T/S) was found to be lower for males (Mean=1.1058.61) than females (Mean=1.1084.01). The difference between males and females for sentence coordination ratio was not significant (since  $\alpha\text{ level} = .905 > \alpha\text{ level}.05, 0.1$ ). Also, for the coordinate phrases per T-unit (CP/T), males (Mean=0.5015.63) were found to produce less compared to females (Mean=0.5567.71). The difference between males and females for coordinate phrases per T-unit (CP/T) was also not significant (since  $\alpha\text{ level} = .134 > \alpha\text{ level}.05, 0.1$ ). Finally, the coordinate phrases per clause (CP/C) produced by males (Mean=0.2546.19) were less than the number produced by females (Mean=0.2865.33). There was no statistical significant difference between males and females for coordinate phrases per clause ( $P\text{-value} = .122 > \alpha\text{ level} = .05, 0.1$ ).

### Gender Variations in Particular Structure Syntactic Complexity

This section presents a summary of the results on gender difference in particular structures complexity measurement. The particular structures come with three main indices comprising Complex nominals per T-unit, Complex nominals per clause and Verb phrase per T-unit. Table 5 presents the details of results for the particular structure complexity for males and females.

An independent T-test was conducted to compare the density of particular structure (coordinate phrases per clause- CP/C, coordinate phrases per T-unit- CP/T and sentence coordination ratio -T/S) between males and females of the three colleges. The study revealed significant difference between males and females usage of number of complex nominals per number of clauses (since  $p\text{-value} = .071 < \alpha\text{ level} = 0.1$ ). It was the males (Mean=2.6751.73) who were found to produce higher density of complex nominals per T-unit (CN/T) compared to females (Mean= 2.5057.62). The males (Mean=1.3077.55) also were found to produce much more complex nominals per clause (CN/C) than females

**Table 4.** Sentence Complexity, Subordination and Coordination Complexity Comparison

Variable	T-test	P-value	Mean	
			Male	Female
Sentence Complexity				
Sentence Complexity Ratio (C/S)	1.903	.058**	2.4099.9	2.2409.40
Subordination				
Complex T-unit ratio (CT/T)	1.676	.095**	0.6023.6	0.5643.82
T-unit Complexity Ratio (C/T)	2.158	.032*	2.1659.7	2.0183.16
Dependent clause ratio (DC/C)	4.936	.000*	0.6313.2	0.4399.41
Dependent clauses per T-unit (DC/T)	3.430	.001*	1.1237.1	0.9297.36
Coordination				
Sentence coordination ratio (T/S)	-.120	.905	1.1058.1	1.1084.01
Coordinate phrases per T-unit (CP/T)	-1.505	.134	0.5015.3	0.5567.71
Coordinate phrases per clause (CP/C)	-1.554	.122	0.2546.9	0.2865.33

\*Significant at 0.05; \*\*significant at 0.1

**Table 5.** Particular Structure Complexity Comparison

Variable	T-test	P-value	Mean	
			Male	Female
Complex nominals per T-unit (CN/T)	1.817	.071**	2.6751.73	2.5057.62
Complex nominals per clause (CN/C)	2.481	.014*	1.3077.55	1.2092.28
Verb phrase per T-unit (VP/T)	1.549	.123	2.9328.23	2.7991.30

\*Significant at 0.05; \*\*significant at 0.1

Source: Author's fieldwork (2020)

(Mean=1.2092.28). The difference between the genders for the complex nominals per clause (CN/C) was significant (since p-value = .014 < alpha level = 0.5). However, the study found no significant difference between the genders for the production of verb phrase per T-unit clauses (since p-value = .123 > alpha level = 0.1), even the results showed that males (Mean=2.9328.23) produced more Verb phrase per T-unit (VP/T) than females (Mean=2.7991.30). Among the three indices (Complex nominals per T-unit, Complex nominals per clause and Verb phrase per T-unit) under the particular structure syntactic complexity, all of them showed that males produce higher density of particular structure than females. The results also showed that not only were males producing higher particular structure, but the difference between the genders was also significant for Complex nominals per T-unit and Complex nominals per clause. It was for only Verb phrase per T-unit that the results found no significant difference.

The findings from the study showed that on Length of Production Unit, the mean length of sentence (MLS) for males (Mean=27.0423.90) was higher than the mean length of sentence (MLS) for females (Mean=24.0325.77). Again, the results showed that the mean length of T-units (MLT) for males (Mean=24.1972.13) was also higher than that of females (Mean=22.1622.10). Also, the mean length of clause (MLC) for males (Mean=11.2068.94) was higher than that of their female (Mean=11.1165.00) counterpart though,

the difference was not significant (since the p-value = .812 > alpha level = .05, 0.1). On the length production unit,

On Length of Production Unit, Wolfe-Quintero et al. (1998) argued that the mean length of T-unit (MLT) and mean length of clause (MLC) are fundamental in determining syntactic development in L2 writing. Among the three indicators to measure sentence lengths, the mean length of clause (MLC) and the mean length of T-units (MLT) produced by males were much greater than that of the females. This finding confirms the study by Jespersen (1922). In his study, he argued that women use simple sentences frequently than men. Looking at the data available, the mean length of sentence (the number of words divided by the number of sentences) for the females is 24.0325.77 compared to that of the males which is 27.0423.90. This clearly shows that the females wrote simple sentences which translated into many sentences hence the mean of 24.0325.77, which is far less than that of the men which is 27.0423. Indeed, the difference between the two is quite significant at p-value of = .029 < alpha-level = 0.05. With regard to the sentence complexity ratio, the score for males was found to be greater than that of the females. This means that the females wrote a lot of simple sentences which translated into more sentences hence the average (Mean=22.409.40) far less that of the males (Mean=24.099.99), at significant difference of (p-value = .058 < alpha level = 0.1) between males and females. For example, the males' sentences were found to be more complex compared to the sentences written by the females as seen below.

1. The SRC week celebration is strategically organized to bring the entire student body together as one and create a sense of belongingness to the college community as students embark on various educative and entertaining programmes. (M-1)
2. First and foremost, it's a medium of socialization. Socialization is very essential for students at colleges and Education. This is because socialization is the process of learning how to live in a way acceptable to one's own society. (F- 9)

The findings of the study also revealed that the number of clauses per sentence (C/S) produced by males were much higher than the number of clauses per sentence (C/S) produced by females. This presupposes that females wrote many sentences which their mean difference to the number of clauses written was less (Mean=2.2409.40) compared to mean for the males (Mean=2.4099.99) at a significant difference of (since  $p\text{-value} = .058 < \alpha \text{ level } 0.1$ ).

With regard to the subordination syntactic complexity, all the four indices showed significant difference between males and females from the three colleges. The number of complex T-units per number of T-units (CT/T) produced by males (Mean=0.6023.36) was greater than that of females (Mean=0.5643.82). The average number of clauses per number of T-units (C/T) produced by males (Mean=2.1659.07) was also much higher than females (Mean=2.0183.16). Males (Mean=0.6313.42) were also found to produce higher number of dependent clauses per number of clauses when compared to females (Mean= 0.4399.41). Again, males (Mean = 1.1237.11) produced higher dependent clauses per T-unit (DC/T) than females (Mean=0.9297.36). All these together point to the fact that the males produced more complex structures compared to the females. For instance, the data suggests that the males produced more complex t-units than the complex t-units which were produced by the females. As said earlier, a complex T-unit is a T-unit that contains a dependent clause. Unlike the females who convey their ideas by putting together many simple sentences, the males were able to piece together so many ideas in a sentence. For example:

1. As they were in our shoes they didn't get it easy but today they made it so whatever we are engaged in, we do it whole heartedly to earn good results and be ourselves. (M – 19)
2. Mr. Chairman, invited guests, my opponent may say SRC celebration brings about entertainment. Does that mean there isn't any form of entertainment unless during SRC week. Hell no, as we all know, entertainment is part of our everyday life so SRC week wouldn't make us to be entertained. Beside, students go for entertainment every Saturday to have fun. Mr. Chairman, ladies and gentlemen, it could be that my opponent does not know about this. (F- 28).

At the level of phrases, the results showed that the females produced more phrase than the males. The density for sentence coordination ratio (T/S) was found to be lower for males (Mean=1.1058.61) than females (Mean=1.1084.01), though the difference between males and females was not significant (since  $\alpha \text{ level} = .905 > \alpha \text{ level } .05, 0.1$ ). Also, for the coordinate phrases per T-unit (CP/T), males (Mean=0.5015.63) were found to produce less compared to females (Mean=0.5567.71). Similarly, the coordinate phrases per clause (CP/C) produced by males (Mean=0.2546.19) were less than the number produced by females (Mean=0.2865.33). This actually confirms the trend established so far in this study that females utilised less complex structures in their writing than the males, hence their (females) high production of phrases.

In terms of noun phrase complexity, the study revealed that males (Mean=2.6751.73) produced higher density of complex nominals per T-unit (CN/T) compared to females (Mean= 2.5057.62). The males (Mean=1.3077.55) also were found to produce much more complex nominals per clause (CN/C) than females (Mean=1.2092.28). Again, the results showed that males (Mean=2.9328.23) produced more Verb phrase per T-unit (VP/T) than females (Mean=2.7991.30).

## DISCUSSION

The study sought to investigate the gender variations in the writing of augmentative essay with respect to syntactic complexity. The study has revealed that males were more syntactically complex in their writing than the females. This finding, thus, supports the findings of previous studies that revealed gender variations in academic writings of ESL students (Jones & Myhill, 2007; Eriksson, 2012; Waskita, 2008; Aperocho, 2016). Waskita's (2008) study on gender variation in writings of ESL students, for instance, reported gender differences in academic writing of ESL students. However, unlike this present study, Waskita argued that females utilised more complex dependent clause in T-units, which contradict the result of this study that showed that males' writings are more complex than females'. A number of reasons could account for this difference. Difference in socio-demographic characteristics of both studies can be cause of the difference in the findings. Another factor that could account for the difference is the fact that this study used equal number of male and females, while Waskita (2008) used fewer males (18) compared to females (31).

Generally, most studies have argued in favour of females' ability to produce more complex syntactic structures compared to males (Eriksson, 2012; Marjanovič-Umek & Fekonja-Peklaj, 2017), which contradicts the findings of the current study. Eriksson (2012), using 13,000 children in ten different language communities reported that girls have more advantages over boys in language abilities in each community. This is not surprising as some few meta-analysis studies that compared a number of studies on gender difference in adolescent language also reported results in favour of girls (Marjanovič-Umek and Fekonja-Peklaj, 2017; Hyde & Linn, 1988). In the study by Marjanovič-Umek & Fekonja-Peklaj (2017), they examined the effect of gender in children and adolescents' language in a meta-analysis study of ten Slovenian studies (nine cross-sectional studies and one longitudinal study published in 2004-2016) and concluded that all the significant effects of the studies proved to be in favour of girls.

Despite the chunk of studies supporting female's ability to utilize syntactic complexity in their essays, a number of studies support the assertion that than males use more complex structures in their essays than females (Aperocho, 2016). These supported the findings of the current study. Dahl (2012) found that males performed better than females when it came to relative clauses. Aperocho (2016) argued that the male argumentative essays had more words, morphemes, coordinators and subordinators which increased the number of T-Unit because of the absence of punctuation

marks between clauses which should have been separated. The author further explained that females had lower number of T-units because they used simple declarative sentences instead of complex sentences. These all reinforces the assertion that males utilise more syntactic complexity in their writings.

### CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS FOR FURTHER RESEARCH

The study established clear variations in the areas of length of production unit, sentence complexity, amount of subordination and coordination and particular structures. It has, therefore, upheld the difference version of gender and language theory as compared to the discursive theory. Be it as it may, the study, therefore, shows that the differences between the way females and males use language exist and lend credit to the claim by researchers who follow the difference approach of gender and language theory that men and women use language differently because of basic difference between them due to socialization and experience.

The study has implication for the scholarship on syntactic variation. The study has shown that syntactic variation can be conditioned by gender just as social class can also influence pronunciation. The study has, among other things, established that the male students are more syntactically complex in their writing than the female. This sharply contradicts the views of some researchers that social factors are not involved in syntactic variation.

The study also has implications for language and gender theory. It has upheld the difference version of gender theory as compared to the social construction version. This is because the differences in the findings, as confirmed by the T-test analysis, cannot be attributed to the social context because the students were in similar context when they wrote the exams so the difference cannot be attributed to any other social factor than gender.

Based on the conclusions from the study, the need for further investigation in any of the following areas is desirable. The first line of further research could look at other genres of writing apart from argumentative essay. A study in this direction will prove rewarding and consequently add to studies in language variation. The present study has focused on gender variation in the use of syntactic complexity, observable in written language. Subsequent studies could examine gender variation in the use of syntactic complexity in spoken language. In such proposed studies, peculiarities of each gender in spontaneous use of language will be unearthed.

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